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ABS Measures The
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This web-based product is a compendium of statistics on the knowledge-based economy and society. Please use the following links to access the contents of this product.

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CORE DIMENSIONS

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This product follows on from the ABS publication [Discussion Paper: Measuring a Knowledge-based Economy and Society-An Australian Framework](#) (cat. no. 1375.0).

Readers are invited to comment on this product as well as on the Framework more generally. See "[Introduction from the Australian Statistician](#)" for information on how to provide feedback.

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ABOUT THIS RELEASE

'Measures of a knowledge-based economy and society, Australia' is a web-based compendium of statistics on the knowledge-based economy and society. The structure of the product is based on the Framework proposed in the ABS 'Discussion Paper: Measuring a Knowledge-based Economy and Society - An Australian Framework' (cat. no. 1375.0).

This product is web-based only and has been designed to be viewed on screen.

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Introduction from the Australian Statistician

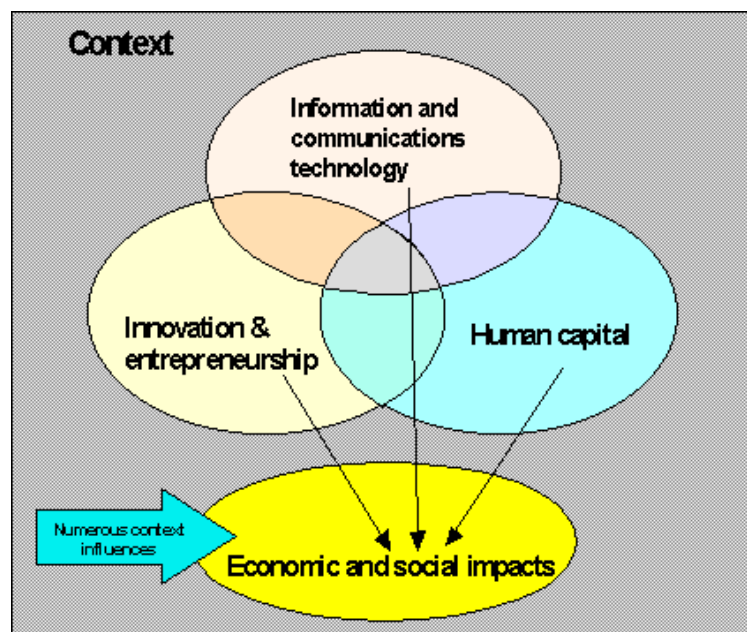
The statistical indicators presented in this web-based product comprise the first ABS compendium of statistics on the knowledge-based economy and society.

The work follows on from the release on 28 August 2002 of the ABS publication [Discussion Paper: Measuring a Knowledge-based Economy and Society —An Australian Framework](#) (cat. no. 1375.0). The Discussion Paper proposes a framework for measuring a knowledge-based economy and society and suggests a number of statistical indicators for elements of the Framework.

This release of indicators covers the three core dimensions described in the Discussion Paper. They are: **Innovation and entrepreneurship**, **Human capital** and **Information and communications technology**.

Additional indicators for the core dimensions will be introduced over time, as will indicators for the two supporting dimensions: **Context** and **Economic and social impacts**. Updates to indicators will occur continually as new information is released.

A simplified diagrammatic representation of the dimension structure of the Framework is presented below. It shows the Context dimension as being pervasive, the three core dimensions as overlapping and the Economic and social impacts dimension as being affected by both the Context and the three core dimensions. In reality, there are many more relationships than those shown.



The indicators in this product generally have a national focus. However, for many of them, information at a regional level (state/territory or lower) will be available from the original sources.

This method of presenting statistical data is new to the ABS and we welcome your comments on its usefulness and useability.

If you would like to comment on this product or the Framework more generally, please contact Tricia O'Reilly (phone 02 6252 7822; email tricia.oreilly@abs.gov.au).

Dennis Trewin
Australian Statistician
September 2003

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How to use this product

The product is structured according to the Framework released in August 2002. For more information on the Framework, see ABS publication [Discussion Paper: Measuring a Knowledge-based Economy and Society—An Australian Framework](#) (cat. no. 1375.0).

The Framework consists of characteristics and indicators for five dimensions. This first release includes characteristics and indicators described in the Framework from three of the five dimensions.

Each of the three dimensions in this product appears as a webpage. Each dimension webpage shows the characteristics and indicators which are included in this release and provides summary statistics for each indicator. More detailed indicator data can be found by clicking on the indicator description.

The detailed view of each indicator generally contains time series data with simple classificatory detail, a graphical view of change over time and internationally comparable data. It also contains links to other relevant information, such as summaries of ABS publications and source information.

[Innovation and Entrepreneurship Indicators](#)

Abbreviations used in this product may be found in the Framework release, see [Abbreviations](#) (cat. no. 1375.0). They are also explained in the detailed view of each indicator.

Statistical units defined on the ABS Business Register

The ABS uses an economic statistics units model on the ABS Business Register to describe the characteristics of businesses, and the structural relationships between related businesses. In mid 2002, to better use the information available as a result of The New Tax System (TNTS), the ABS changed its economic statistics units model, and the way it structured its Business Register.

Most businesses and organisations in Australia need to obtain an Australian Business Number (ABN). Most of these businesses have simple structures; therefore the unit registered for an ABN will satisfy ABS statistical requirements and such units comprise the "ATO Maintained Population" within the ABS Business Register. For those businesses where the ABN unit is not suitable for ABS statistical requirements, the ABS will apply its Economic Statistics units model through direct contact with the business. This allows the ABS to best represent the business for statistical purposes. These businesses constitute the "ABS Maintained Population". This population consists typically of large, complex and diverse businesses.

If you would like to be alerted to updates of the knowledge-based economy and society product, please contact Tricia O'Reilly on <02 6252 7822 or tricia.oreilly@abs.gov.au>.

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INNOVATION AND ENTREPRENEURSHIP INDICATORS

A summary of the Innovation and Entrepreneurship indicators is presented below.

A more detailed view of each indicator (including more detailed data, definitions etc.) can be found by clicking on the indicator description shown below. Please note that the description of many of the indicators in this view has been shortened to fit. In such cases, the more detailed view for those indicators contains their full description.

Abbreviations used on this page may be found in the Framework release, see [Abbreviations](#) (cat. no. 1375.0). They are also explained in the detailed view of each indicator.

CHARACTERISTIC: RESEARCH BASE AND POTENTIAL FOR KNOWLEDGE CREATION

	%	period	%	period
Total R&D expenditure as a proportion of GDP	1.55	2000-01	1.62	2002-03

	\$m	period	\$m	period
Total R&D expenditure by sector of performance				

Business	4,983	2000-01	5,979	2002-03
Government	2,356	2000-01	2,482	2002-03
Higher education	2,790	2000-01	3,430	2002-03
Private non-profit	289	2000-01	360	2002-03
Total	10,417	2000-01	12,250	2002-03

Expenditure on basic research

Pure basic research	1,059	2000-01	1,240	2002-03
Strategic basic research	1,630	2000-01	1,904	2002-03

CHARACTERISTIC: KNOWLEDGE CREATION WITH THE PURPOSE OF COMMERCIAL POTENTIAL

	\$m	period	\$m	period
<u>Expenditure on applied research and experimental development</u>				
Applied research	3,611	2000-01	4,379	2002-03
Experimental development	4,117	2000-01	4,727	2002-03

CHARACTERISTIC: KNOWLEDGE NETWORKS AND FLOWS

	%	period	%	period
<u>Business funding of R&D by sector performing as a proportion of total Business R&D funding</u>				
Business	94.0	2000-01	94.1	2002-03
Government	2.7	2000-01	2.3	2002-03
Higher education	2.8	2000-01	3.1	2002-03

<u>Proportion of Australian business R&D funded from overseas</u>	4.7	2000-01	5.4	2002-03
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<u>Proportion of business R&D performed overseas</u>	1.3	2000-01	1.6	2002-03
--	-----	---------	-----	---------

	no.	period
<u>International mobility of human resources by selected qualifications and occupations</u>		
net gain	18,787	2001-02

CHARACTERISTIC: SUPPORT FOR INNOVATION

	\$m	period	\$m	period
<u>Government funded expenditure on R&D by level of government</u>				
Commonwealth	3,930	2000-01	4,612	2002-03

State and local government	811	2000-01	826	2002-03
Value of venture capital drawdowns	3,654	2001	4,792	2003

This section contains the following subsection :

[Total research and experimental development \(R&D\) expenditure by sector of performance \(business, government, private non-profit, higher education\) as a proportion of Gross Domestic Product \(GDP\)](#)

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CHARACTERISTIC: RESEARCH BASE AND POTENTIAL FOR KNOWLEDGE CREATION

INDICATOR: Total research and experimental development (R&D) expenditure by sector of performance (business, government, private non-profit, higher education) as a proportion of Gross Domestic Product (GDP)

Gross expenditure on research and experimental development (GERD) increased as a percentage of GDP from 1.55% in 2000-01 to 1.62% in 2002-03. This increase was primarily due to increases over the period in business expenditure on research and experimental development (BERD) and higher education expenditure on R&D (HERD).

EXPENDITURE ON R&D AS A PERCENTAGE OF GDP

	1999-00 % GDP	2000-01 % GDP	2001-02 % GDP	2002-03 % GDP
BERD	0.66	0.74	0.81	0.79

GOVERD	na	0.35	na	0.33
HERD	na	0.42	na	0.45
GERD(a)	na	1.55	na	1.62

na not available

(a) includes expenditure by the private non-profit sector.

Source: ABS Research and Experimental Development, [All Sector Summary](#), Australia (cat. no. 8112.0), ABS Research and Experimental Development, [Businesses](#), Australia (cat. no. 8104.0), ABS Research and Experimental Development, [Higher Education Organisations](#), Australia (cat. no. 8111.0), ABS Research and Experimental Development, [Government and Private Non-Profit Organisations](#), Australia (cat. no. 8109.0).

STATISTICAL NOTES

BERD

Business expenditure on research and experimental development.

GERD

Gross expenditure on research and experimental development.

GOVERD

Expenditure on research and experimental development carried out by government organisations.

HERD

Higher education expenditure on research and experimental development.

R&D

R&D is defined in accordance with the Organisation for Economic Co-operation and Development (OECD) standard as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.

R&D surveys

The [R&D Business survey](#) is conducted annually and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by businesses in Australia.

The [R&D Higher Education survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by higher education organisations in Australia.

The [R&D General government survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by government organisations in Australia.

The [R&D Private non-profit sector survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by private non-profit organisations in Australia.

Sectors:

The sector classification used in the compilation of R&D statistics is adapted from the guidelines specified by the OECD for use in the conduct of R&D surveys.

Business sector

This sector includes all businesses whose primary activity is the production of goods or services for sale to the general public at a price intended to cover at least the cost of production, and the private non-profit institutions mainly serving them. The Business sector for the R&D survey excludes businesses mainly engaged in Agriculture, forestry, and fishing (i.e. industries in Division A of the Australian and New Zealand Standard Industrial Classification ([ANZSIC](#)), 1993 (cat. no. 1292.0)), partly because of collection difficulties and partly because such businesses are believed to have very low R&D activity (agricultural R&D activity is generally carried out by specialised research institutes not included in ANZSIC Division A).

Government sector

This sector includes all Commonwealth, state and local government departments and authorities. The Government sector for the R&D survey excludes local government organisations because it is considered that their contribution to total R&D activity would be minimal. Public sector organisations mainly engaged in higher education (e.g. universities) are included in the Higher education sector whilst those mainly engaged in trading or financial activities are included in the Business sector.

Higher education sector

This sector includes all universities and other institutions of post-secondary education whatever their source of finance or legal status. The Higher education sector for the R&D survey excludes non-university post-secondary education institutions (e.g. Technical and Further Education colleges) because it is considered that their contribution to total R&D activity would be minimal.

Private non-profit sector

This sector includes private or semi-public incorporated organisations which are established with the intention of operating without making a profit.

INTERNATIONAL COMPARISONS

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Gross expenditure on research and experimental development (GERD).

GERD/GDP RATIOS OF OECD COUNTRIES

	2000-01	2002-03
	%	%
Finland	3.40	3.46
Japan	2.99	3.12
Iceland	2.75	3.09
Korea	2.65	2.91
United States of America	2.72	2.67

Germany	2.49	2.52
France	2.18	2.20
Austria	1.86	1.93
Canada	1.92	1.91
United Kingdom	1.84	1.88
Australia	1.55	1.62
Czech Republic	1.33	1.30
Spain	0.94	1.03
Hungary	0.80	1.02
Portugal	0.80	0.93
Poland	0.66	0.59
Slovak Republic	0.65	0.58

Source: OECD Main Science and Technology Indicators, 2004/1 (<http://www.oecd.org>), ABS Research and Experimental Development, [All Sector Summary](#), Australia (cat. no. 8112.0).

Business expenditure on research and experimental development (BERD).

BERD/GDP RATIOS OF OECD COUNTRIES

	2000-01	2001-02	2002-03
	%	%	%
Finland	2.41	2.42	2.41
Japan	2.12	2.26	2.32
Korea	1.96	2.23	2.18
United States of America	2.04	2.00	1.87
Iceland	1.55	1.80	1.77
Germany	1.75	1.75	1.75
Denmark	na	1.65	1.75
Belgium	1.48	1.60	1.64
France	1.36	1.41	1.37
United Kingdom	1.21	1.24	1.26
Canada	1.15	1.21	1.05
Netherlands	1.11	1.10	1.03
Norway	na	0.96	0.96
Australia	0.74	0.81	0.79
Czech Republic	0.80	0.78	0.79

Spain	0.50	0.50	0.56
Italy	0.53	0.55	0.54
Slovak Republic	0.43	0.43	0.37
Hungary	0.35	0.38	0.36
Portugal	0.22	0.27	0.32
Poland	0.24	0.23	0.13

Source: OECD Main Science and Technology Indicators, 2004/1 (<http://www.oecd.org>), ABS Research and Experimental Development, [Businesses](#), Australia (cat. no. 8104.0).

Higher education expenditure on research and experimental development (HERD).

HERD/GDP RATIOS OF OECD COUNTRIES

	2000 %	2002 %
Finland	0.61	0.66
Canada	0.55	0.63
Denmark	0.45	0.58
Iceland	0.45	0.50
Japan	0.43	0.43
France	0.41	0.43
Germany	0.40	0.43
Australia	0.42	0.45
United Kingdom	0.38	0.42
United States of America	0.37	0.42
Portugal	0.30	0.33
Spain	0.28	0.31
Korea	0.30	0.30
Hungary	0.19	0.26
Poland	0.21	0.20
Czech Republic	0.19	0.20
Slovak Republic	0.06	0.05

Source: OECD Main Science and Technology Indicators, 2004/1 (<http://www.oecd.org>), ABS Research and Experimental Development, [Higher Education Organisations](#), Australia (cat. no. 8111.0).

GOVERD/GDP RATIOS OF OECD COUNTRIES

	2000-01 %	2002-03 %
Iceland	0.70	0.76
Korea	0.35	0.39
France	0.38	0.37
Finland	0.36	0.36
Germany	0.34	0.35
Hungary	0.21	0.34
Australia	0.35	0.33
Czech Republic	0.34	0.30
Japan	0.30	0.30
Netherlands	0.25	0.26
Poland	0.21	0.26
United States of America	0.19	0.24
Italy	0.20	0.23
Canada	0.22	0.22
Denmark	0.29	0.18
Portugal	0.19	0.18
United Kingdom	0.22	0.17
Spain	0.15	0.16
Slovak Republic	0.16	0.15
Ireland	0.09	0.09
Switzerland	0.03	0.03

Source: OECD Main Science and Technology Indicators, 2004/1 (<http://www.oecd.org>), ABS Research and Experimental Development, [Government and Private Non-Profit Organisations](#), Australia (cat. no. 8109.0).

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CHARACTERISTIC: RESEARCH BASE AND POTENTIAL FOR KNOWLEDGE CREATION

INDICATOR: Total research & experimental development (R&D) expenditure by sector of performance

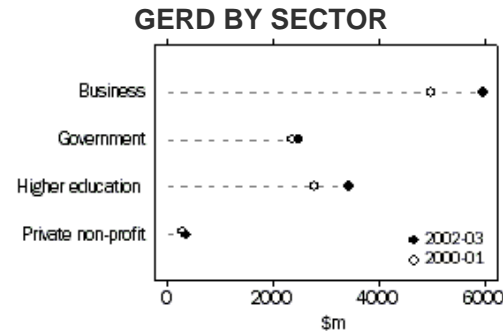
Gross expenditure on R&D has increased by 18% from \$10,417m in 2000-01 to \$12,250m in 2002-03. With the exception of the state/territory government which remained steady, all sectors showed an increase in R&D expenditure compared with 2000-01.

GROSS EXPENDITURE ON R&D BY SECTOR OF PERFORMANCE

	2000-01	2002-03
Sector	\$'000	\$'000
Business	4,982,558	5,978,614
Government		
Commonwealth	1,404,831	1,531,310
State/territory	950,966	950,852
Higher education	2,789,753	3,429,597

Private non-profit	289,038	359,548
Total	10,417,146	12,249,921

Source: ABS Research and Experimental Development, [All Sector Summary](#), Australia (cat. no. 8112.0).



Source: ABS Research and Experimental Development, All Sector Summary, Australia (cat. no. 8112.0).

STATISTICAL NOTES

GERD

Gross expenditure on research and experimental development.

R&D definition

R&D is defined in accordance with the Organisation for Economic Co-operation and Development (OECD) standard as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.

R&D surveys

The [R&D Business survey](#) is conducted annually and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by businesses in Australia.

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The [R&D General government survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by government organisations in Australia.

The [R&D Private non-profit sector survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by private non-profit organisations in Australia.

Sectors:

The sector classification used in the compilation of R&D statistics is adapted from the guidelines specified by the OECD for use in the

conduct of R&D surveys.

Business sector

This sector includes all businesses whose primary activity is the production of goods or services for sale to the general public at a price intended to cover at least the cost of production, and the private non-profit institutions mainly serving them. The Business sector for the R&D survey excludes businesses mainly engaged in Agriculture, forestry, and fishing (i.e. industries in Division A of the Australian and New Zealand Standard Industrial Classification ([ANZSIC](#)), 1993 (cat. no. 1292.0)), partly because of collection difficulties and partly because such businesses are believed to have very low R&D activity (agricultural R&D activity is generally carried out by specialised research institutes not included in ANZSIC Division A).

Government sector

This sector includes all Commonwealth, state and local government departments and authorities. The Government sector for the R&D survey excludes local government organisations because it is considered that their contribution to total R&D activity would be minimal. Public sector organisations mainly engaged in higher education (e.g. universities) are included in the Higher education sector whilst those mainly engaged in trading or financial activities are included in the Business sector.

Higher education sector

This sector includes all universities and other institutions of post-secondary education whatever their source of finance or legal status. The Higher education sector for the R&D survey excludes non-university post-secondary education institutions (e.g. Technical and Further Education colleges) because it is considered that their contribution to total R&D activity would be minimal.

Private non-profit sector

This sector includes private or semi-public incorporated organisations which are established with the intention of operating without making a profit.

INTERNATIONAL COMPARISONS

PROPORTION OF GERD PERFORMED BY SECTOR

	Business enterprise		Higher education		Government		Private non-profit	
	2000-01	2002-03	2000-01	2002-03	2000-01	2002-03	2000-01	2002-03
Australia	47.8	48.8	26.8	28.0	22.6	20.3	2.8	2.9
Canada	59.8	(a)55.2	28.4	(a)32.8	11.5	(a)11.7	0.3	(a)0.2
Czech Republic	60.0	61.1	14.2	15.6	25.3	23.0	0.5	0.3
Finland	70.9	69.9	17.8	19.2	10.6	10.4	0.7	0.6
France	62.5	(a)62.2	18.8	(a)19.5	17.3	(a)16.9	1.4	(a)1.4
Germany	(b)70.3	(b)69.3	(b)16.1	(b)16.9	(b)(c)13.6	(b)(c)13.7	na	na
Iceland	(b)56.4	(b)57.2	(b)16.2	(b)16.1	(b)25.5	(b)24.5	(b)1.9	(b)2.2
Japan	71.0	74.4	14.5	13.9	9.9	9.5	4.6	2.1
Korea(d)	74.0	74.9	11.3	10.4	13.3	13.4	1.4	1.3

Poland	36.1	21.4	31.5	33.5	32.2	44.9	0.1	0.3
Portugal	(b)27.8	(b)34.4	(b)37.5	(b)35.6	(b)23.9	(b)19.8	(b)10.8	(b)10.2
Spain	53.7	54.6	29.6	29.8	15.8	15.4	0.9	0.2
United Kingdom	65.6	67.0	20.8	22.6	12.2	(b)8.9	1.5	1.5
United States	75.2	(a)70.2	13.7	(a)15.9	(e)7.0	(a)(e)8.8	4.1	(a)5.1

(a) Provisional.

(b) National estimate or projection adjusted, if necessary, by the Secretariat to meet OECD norms.

(c) Includes other classes

(d) Excluding R&D in social sciences and humanities.

(e) Federal or central government only.

na not available

Source: [OECD Main Science and Technology Indicators](#) 2004/1 (<http://www.oecd.org>), ABS Research and Experimental Development, [All Sector Summary](#), Australia (cat. no. 8112.0).

STATISTICAL NOTES

OECD Standards

The data in the publication **OECD Main Science and Technology Indicators** are collected and presented in line with standard OECD methodology for R&D statistics entitled **The Measurement of Scientific and Technological Activities: Proposed Standard Practice for Surveys of Research and Experimental Development-Frascati Manual 2002 (OECD)**.

International comparability

Though all OECD countries generally collect and report in line with the **Frascati Manual**, some detailed national specifications may vary from OECD standards. These differences are generally too small to affect the general indicators quoted in **OECD Main Science and Technology Indicators**. The main exceptions can be found in Annex 1 of **OECD Main Science and Technology Indicators**.

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CHARACTERISTIC: RESEARCH BASE AND POTENTIAL FOR KNOWLEDGE CREATION

INDICATOR: Expenditure on basic research by sector of performance (business, government, private non-profit, higher education)

Expenditure on pure basic research in 2002-03 was up \$181m from 2000-01, while expenditure on strategic basic research was up \$274m.

PURE BASIC RESEARCH and STRATEGIC BASIC RESEARCH BY SECTOR

	2000-01	2002-03
Pure Basic Research	\$'000	\$'000
Business	38,227	49,857
Government		
Commonwealth	71,166	99,014
State/territory	38,164	53,213

Higher Education	837,370	975,286
Private non-profit	74,178	62,692
Total	1,059,105	1,240,062
<hr/>		
	2000-01	2002-03
Strategic Basic Research	\$'000	\$'000
<hr/>		
Business	288,247	348,544
Government		
Commonwealth	429,039	471,025
State/territory	121,858	131,482
Higher Education	666,144	802,881
Private non-profit	124,456	150,155
Total	1,629,744	1,904,087
<hr/>		

Source: ABS Research and Experimental Development, [All Sector Summary, Australia](#) (cat. no. 8112.0).

STATISTICAL NOTES

The Australian Standard Research Classification

[The Australian Standard Research Classification](#) (ASRC) is the collective name for a set of three related classifications developed for use in the measurement and analysis of research and experimental development (R&D) undertaken in Australia, both in the public and private sectors.

R&D

R&D is defined in accordance with the Organisation for Economic Co-operation and Development (OECD) standard as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.

R&D activity

Type of [R&D activity](#) comprises pure basic research, strategic basic research, applied research and experimental development. Data in this classification are subjectively allocated by respondents at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Analysts using this classification should bear the original subjectivity in mind. For a more comprehensive interpretation of the definition of R&D activity, contact the ABS or refer to the OECD publication **The Measurement of Scientific and Technical Activities (Frascati Manual 2002), OECD, Paris, 2003**.

R&D surveys

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The [R&D Private non-profit sector survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by private non-profit organisations in Australia.

Basic research

Experimental and theoretical work undertaken primarily to acquire new knowledge without a specific application in view. It consists of pure basic research and strategic basic research. Pure basic research is carried out without looking for long-term benefits other than the advancement of knowledge. Strategic basic research is directed into specified broad areas in the expectation of useful discoveries. It provides the broad base of knowledge for the solution of recognised practical problems.

Sectors:

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Business sector

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Private non-profit sector

This sector includes private or semi-public incorporated organisations which are established with the intention of operating without making a profit.

INTERNATIONAL COMPARISONS

BASIC RESEARCH EXPENDITURES, 1981-2001 or latest year available

	As a percentage of R&D											2000	2001
	1981	1984	1985	1986	1989	1990	1993	1994	1995	1998	1999		
Australia	34.7	31.8				28.2		27.2		26.5		25.9	
France				19.9		20.3			22.1		24.2	23.6	
Germany	19.0		16.7		17.1		18.7						
Ireland	10.3		11.7			(a)7.2			10.3				
Japan	(b)12.2		(b)11.7			(b)12.2			(b)14.2			12.4	12.2
Netherlands			(a)14.6			(a)13.5			(a)9.5				
	(a)												
Sweden	(c)22.9		(c)20.4			(c)20.8							
United States of America	13.7		13.0			15.1			15.9		(d)18.1	20.9	

(a) Break in the series.

(b) Overestimated or based on overestimated data.

(c) Underestimated or based on underestimated data.

(d) Provisional.

Source: R&D database, May 2003, OECD Science, Technology and Industry Outlook 2003 (<http://www.oecd.org>).

BASIC RESEARCH EXPENDITURES, 1981-2001 or latest year available

	As a percentage of GDP											2000	2001
	1981	1984	1985	1986	1989	1990	1993	1994	1995	1998	1999		
Australia	0.33	0.34				0.37		0.43		0.40		0.40	
France				0.44		0.48			0.51	0.54	0.53	0.51	0.52
Germany	0.47		0.46		0.49		0.44						
Ireland	0.07		0.09			(a)0.06			0.12	0.15	0.15	0.14	
Japan	(b)0.28		(b)0.32			(b)0.35			(b)0.41	0.35	0.36	0.37	0.37
Netherlands			(a)0.29			(a)0.28			(a)0.19				
	(a)(c)												
Sweden	0.51		(c)0.57			(c)0.59							
United States of America	0.32		0.36			0.40			0.40	0.40	0.42	0.43	0.47

- (a) Break in the series.
- (b) Overestimated or based on overestimated data.
- (c) Underestimated or based on underestimated data.

Source: MSTI database 2004/1 and R&D database, May 2004, OECD Science, Technology and Industry Outlook 2004 (<http://www.oecd.org>).

STATISTICAL NOTES

International comparability

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CHARACTERISTIC: KNOWLEDGE CREATION WITH THE PURPOSE OF COMMERCIAL POTENTIAL

INDICATOR: Expenditure on applied research and experimental development by sector of performance

In 2002-03, the Business sector accounted for 35% (\$1,540m) of expenditure on Applied research and 85% (\$4,040m) of expenditure on Experimental development activity and was the main contributor to each of these activities.

APPLIED RESEARCH AND EXPERIMENTAL DEVELOPMENT EXPENDITURE BY SECTOR

	2000-01 \$'000	2002-03 \$'000
Applied research		
Business	1,187,419	1,540,457
Government		
Commonwealth	604,288	689,375
State/territory	679,077	648,877
Higher education	1,072,762	1,390,706
Private non-profit	67,658	109,485

Total	3,611,204	4,378,899
Experimental development	\$'000	\$'000
Business	3,468,665	4,039,756
Government		
Commonwealth	300,340	271,895
State/territory	111,866	117,281
Higher education	213,477	260,725
Private non-profit	22,745	37,216
Total	4,117,094	4,726,873

Source: ABS Research and Experimental Development, [All Sector Summary](#), Australia (cat. no. 8112.0).

STATISTICAL NOTES

The Australian Standard Research Classification

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R&D

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R&D activity

Type of [R&D activity](#) comprises pure basic research, strategic basic research, applied research and experimental development. Data in this classification are subjectively allocated by respondents at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Analysts using this classification should bear the original subjectivity in mind. For a more comprehensive interpretation of the definition of R&D activity, contact the ABS or refer to the OECD publication **The Measurement of Scientific and Technical Activities (Frascati Manual 2002)**, OECD, Paris, 2003.

Applied research

Original work undertaken in order to acquire new knowledge with a specific application in view. It is undertaken either to determine possible uses for the findings of basic research or to determine new methods or ways of achieving some specific and predetermined objectives.

Experimental development

Systematic work, using existing knowledge gained from research or practical experience, for the purpose of creating new or improved products/processes.

R&D surveys

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The [R&D Higher Education survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by higher education organisations in Australia.

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Sectors:

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Business sector

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Government sector

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Higher education sector

This sector includes all universities and other institutions of post-secondary education whatever their source of finance or legal status. The Higher education sector for the R&D survey excludes non-university post-secondary education institutions (e.g. Technical and Further Education colleges) because it is considered that their contribution to total R&D activity would be minimal.

Private non-profit sector

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CHARACTERISTIC: KNOWLEDGE NETWORKS AND FLOWS

INDICATOR: Business funding of research and experimental development (R&D) by sector performing as a proportion of total Business R&D funding

The majority of business funding of R&D is for R&D performed by the business sector itself. The Higher education sector received the second highest proportion of funding from business sources in 2002-03, at 3.1% of the total.

BUSINESS SECTOR FUNDING OF R&D BY SECTORS OF PERFORMANCE

Business	Common-wealth government	State/territory government	Higher education	Private non-profit	Total
2000-01					
\$'000	\$'000	\$'000	\$'000	\$'000	\$'000

Business sector funding	4,533,921	76,922	54,543	136,221	19,507	4,821,114
	%	%	%	%	%	%
Percentage total business funding	94.0	1.6	1.1	2.8	0.4	100

2002-03

	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Business sector funding	5,354,090	78,044	50,256	174,093	31,594	5,688,077
	%	%	%	%	%	%
Percentage total business funding	94.1	1.4	0.9	3.1	0.6	100

Source: ABS Research and Experimental Development, [All Sector Summary](#), Australia (cat. no. 8112.0).

STATISTICAL NOTES

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CHARACTERISTIC: KNOWLEDGE NETWORKS AND FLOWS

INDICATOR: Proportion of Australian business research and experimental development (R&D) funded from overseas

The Business sector receives a small but growing proportion of funds from overseas sources. In 2002-03 this was 5.4% of the total R&D business sector expenditure.

BUSINESS R&D FUNDED FROM OVERSEAS

	1999-00 \$'000	2000-01 \$'000	2001-02 \$'000	2002-03 \$'000
Overseas funding of Business R&D	189,165	232,844	341,844	323,381
Total Business sector expenditure	4,136,660	4,982,558	5,769,697	5,978,614
	%	%	%	%
Overseas funding as proportion of business sector expenditure	4.6	4.7	5.9	5.4

STATISTICAL NOTES

The Australian Standard Research Classification

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R&D

R&D is defined in accordance with the Organisation for Economic Co-operation and Development (OECD) standard as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.

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INTERNATIONAL COMPARISONS

PROPORTION OF BUSINESS EXPENDITURE ON R&D (BERD) FINANCED BY SECTOR

	BERD financed by Industry		BERD financed by government		BERD financed by other national sources		BERD financed by abroad	
	2000-01 %	2002-03 %	2000-01 %	2002-03 %	2000-01 %	2002-03 %	2000-01 %	2002-03 %
Australia	91.0	89.6	3.8	4.3	0.6	0.7	4.7	5.4
Canada	68.5	75.9	2.3	3.2	0.0	0.0	29.1	21.0
Czech Republic	80.6	84.0	14.7	12.1	1.0	1.6	3.6	2.3
Finland	95.4	95.7	3.5	3.2	0.1	0.1	1.0	1.0
Germany	90.8	91.2	6.9	6.2	0.2	0.2	2.1	2.4
Hungary	75.8	69.3	6.1	7.2	0.0	0.1	17.2	22.6
Italy	80.5	78.0	11.0	15.0	0.3	0.3	8.2	6.8
Japan	97.7	97.9	1.7	1.0	0.1	0.6	0.6	0.5
Korea	92.8	93.0	7.0	6.4	0.2	0.1	0.0	0.5
Poland	66.3	86.5	32.0	11.8	0.1	0.3	1.6	1.4
Slovak Republic	77.9	77.5	20.6	21.1	0.0	0.3	1.6	1.2
Spain	86.7	84.0	7.2	9.5	2.3	0.5	3.7	5.9
United Kingdom	69.7	66.0	8.8	6.7	0.0	0.0	21.5	27.2
United States of America	90.4	90.1	9.6	9.9	0.0	0.0	na	na

na not available.

Source: [OECD Main Science and Technology Indicators](http://www.oecd.org) (<http://www.oecd.org>), ABS Research and Experimental Development, [Businesses](#), Australia (cat. no. 8104.0).

STATISTICAL NOTES

OECD Standards

The data in the publication **OECD Main Science and Technology Indicators** are collected and presented in line with standard OECD methodology for R&D statistics entitled **The Measurement of Scientific and Technological Activities: Proposed Standard Practice for Surveys of Research and Experimental Development - Frascati Manual 2002 (OECD)**.

International comparability

Though all OECD countries generally collect and report in line with the **Frascati Manual**, some detailed national specifications may vary from OECD standards. These differences are generally too small to affect the general indicators quoted in **OECD Main Science and Technology Indicators**. The main exceptions can be found in Annex 1 of this publication.

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CHARACTERISTIC: KNOWLEDGE NETWORKS AND FLOWS

INDICATOR: Proportion of business research and experimental development (R&D) performed overseas

There was an increase in the value of Business sector expenditure on R&D performed overseas in 2002-03 compared to 2001-02.

BUSINESS SECTOR R&D EXPENDITURE BY LOCATION

	1999-00 \$'000	2000-01 \$'000	2001-02 \$'000	2002-03 \$'000
Overseas	40,722	63,788	77,164	98,284
Within Australia	4,095,938	4,918,770	5,692,533	5,880,330
Total business expenditure	4,136,660	4,982,558	5,769,697	5,978,614
	%	%	%	%

Source: ABS Research and Experimental Development, [Businesses](#), Australia (cat. no. 8104.0).

STATISTICAL NOTES

The Australian Standard Research Classification

[The Australian Standard Research Classification](#) (ASRC) is the collective name for a set of three related classifications developed for use in the measurement and analysis of research and experimental development (R&D) undertaken in Australia, both in the public and private sectors. It allows the comparison of R&D data between sectors of the Australian economy (e.g. general government, private non-profit organisations, business enterprises and educational institutions). One of the component classifications, Research Fields, Courses and Disciplines, is designed to also allow data collected on higher education courses, units of study and teaching activity to be categorised.

R&D

R&D is defined in accordance with the Organisation for Economic Co-operation and Development (OECD) standard as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.

R&D Business survey

The [R&D Business survey](#) is conducted annually and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by businesses in Australia.

Sectors:

The sector classification used in the compilation of R&D statistics is adapted from the guidelines specified by the OECD for use in the conduct of R&D surveys.

Business sector

This sector includes all businesses whose primary activity is the production of goods or services for sale to the general public at a price intended to cover at least the cost of production, and the private non-profit institutions mainly serving them. The Business sector for the R&D survey excludes businesses mainly engaged in Agriculture, forestry, and fishing (i.e. industries in Division A of the Australian and New Zealand Standard Industrial Classification ([ANZSIC](#)), 1993 (cat. no. 1292.0)), partly because of collection difficulties and partly because such businesses are believed to have very low R&D activity (agricultural R&D activity is generally carried out by specialised research institutes not included in ANZSIC Division A).

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CHARACTERISTIC: KNOWLEDGE NETWORKS AND FLOWS

INDICATOR: International migration of human resources by selected qualifications and occupations

In 2001–02 there was a net gain of 18,787 persons in selected occupations equivalent to definitions and guidelines in the OECD's manual, **The Measurement of Scientific and Technological Activities, Manual on the Measurement of Human Resources Devoted to S&T (Canberra Manual)**. In particular, the number of computing professionals arriving in Australia was greater than twice the number of those departing permanently or long-term.

PERSONS AGED 15 YEARS AND OVER, ARRIVING AND DEPARTING PERMANENTLY OR LONG-TERM 2001–02

	Arrivals	Departures	Net gain
Occupation	no.	no.	no.
Persons in selected occupations			
Specialist managers	6,762	3,840	2,922

Professionals			
Natural and physical science	2,324	2,030	294
Building and engineering	9,944	7,131	2,813
Computing	9,478	4,415	5,063
Health	10,656	8,416	2,240
Education	11,001	10,091	910
Other	29,014	24,469	4,545
Total persons in selected occupations	79,179	60,392	18,787
Other occupations	81,110	66,885	14,225
Not stated/inadequately described	22,149	11,620	10,529
Not applicable(a)	125,275	54,376	70,899
Total	307,713	193,273	114,440

(a) Includes retired, pensioners, disabled, housekeepers, students and unemployed.

Source: ABS [Human Resources by Selected Qualifications and Occupations](#) Australia, 2001 (cat. no. 8149.0).

STATISTICAL NOTES

Data sources

Persons arriving in, or departing from, Australia provide information in the form of incoming and outgoing passenger cards. Incoming persons also provide information in visa applications, apart from people travelling as Australian and New Zealand citizens. These and other information available to the Department of Immigration and Multicultural and Indigenous Affairs serve as the source of statistics of overseas arrivals and departures published by the Australian Bureau of Statistics (ABS).

Long-term departures

Comprise Australian residents who intend to stay abroad for 12 months or more (but not permanently) and overseas visitors departing who stayed 12 months or more in Australia.

Long-term arrivals

Comprise overseas visitors who intend to stay in Australia for 12 months or more (but not permanently) and Australian residents returning after an absence of 12 months or more overseas.

Selected occupations

Occupation data have been classified according to the [Australian Standard Classification of Occupations, Second Edition](#) (ASCO) (cat. no 1220.0). ASCO is a skill-based classification of occupations.

Selected occupations are those classified as ASCO occupations:

sub-major group 12, Specialist managers

major group 2, Professionals

Selected qualifications and occupations definitions

These are from definitions and guidelines in the OECD's manual, **The Measurement of Scientific and Technological Activities, Manual on the Measurement of Human Resources Devoted to S&T (Canberra Manual)**

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CHARACTERISTIC: SUPPORT FOR INNOVATION

INDICATOR: Government funded expenditure on research and experimental development (R&D) by level of government

The majority of government funding of research and experimental development is for R&D performed by the Higher Education sector.

GOVERNMENT SECTOR FUNDING OF R&D BY SECTORS OF PERFORMANCE

	Business	Common-wealth government	State/territory government	Higher education	Private non-profit	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
2000-01						
Commonwealth government funding	179,237	1,193,214	72,938	(a)2,410,802	73,682	3,929,873
State and local government funding	8,428	27,491	657,439	87,859	29,876	811,094
Total	187,665	1,220,705	730,377	2,498,661	103,558	4,740,967

2002-03						
Commonwealth government funding	246,831	1,255,884	67,373	(b)2,937,893	103,939	4,611,921
State and local government funding	11,474	39,624	630,271	104,494	39,821	825,684
Total	258,305	1,295,508	697,644	3,042,387	143,760	5,437,605

(a) Includes \$1,761m of General University funds (GUF), the majority of which is funding from the Commonwealth government.

(b) Includes \$2,033m of General University funds (GUF), the majority of which is funding from the Commonwealth government.

Source: ABS Research and Experimental Development, [All Sector Summary](#), Australia (cat. no. 8112.0).

STATISTICAL NOTES

R&D

R&D is defined in accordance with the Organisation for Economic Co-operation and Development (OECD) standard as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.

R&D surveys

The [R&D Business survey](#) is conducted annually and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by businesses in Australia.

The [R&D Higher Education survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by higher education organisations in Australia.

The [R&D General government survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by government organisations in Australia.

The [R&D Private non-profit sector survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by private non-profit organisations in Australia.

Sectors:

The sector classification used in the compilation of R&D statistics is adapted from the guidelines specified by the OECD for use in the conduct of R&D surveys.

Business sector

This sector includes all businesses whose primary activity is the production of goods or services for sale to the general public at a price intended to cover at least the cost of production, and the private non-profit institutions mainly serving them. The Business sector for the R&D survey excludes businesses mainly engaged in Agriculture, forestry, and fishing (i.e. industries in Division A of the Australian and New Zealand Standard Industrial Classification ([ANZSIC](#)), 1993 (cat. no. 1292.0)), partly because of collection difficulties and partly because such businesses are believed to have very low R&D activity (agricultural R&D activity is generally carried out by specialised research institutes not included in ANZSIC Division A).

Government sector

This sector includes all Commonwealth, state and local government departments and authorities. The Government sector for the R&D survey excludes local government organisations because it is considered that their contribution to total R&D activity would be minimal. Public sector organisations mainly engaged in higher education (e.g. universities) are included in the Higher education sector whilst those mainly engaged in trading or financial activities are included in the Business sector.

Higher education sector

This sector includes all universities and other institutions of post-secondary education whatever their source of finance or legal status. The Higher education sector for the R&D survey excludes non-university post-secondary education institutions (e.g. Technical and Further Education colleges) because it is considered that their contribution to total R&D activity would be minimal.

Private non-profit sector

This sector includes private or semi-public incorporated organisations which are established with the intention of not making a profit.

Indicator originally proposed in Framework

The ABS Discussion Paper, [Measuring a knowledge-based economy and society, An Australian Framework](#) (cat. no. 1375.0) proposed the indicator 'Government funded expenditure on R&D as a proportion of GDP by level of government'. See Innovation and Entrepreneurship indicator, 'Total Research and Experimental Development (R&D) expenditure by sector of performance (business, government, private non-profit, higher education) as a proportion of Gross Domestic Product (GDP)' for GDP ratios.

INTERNATIONAL COMPARISONS

PERCENTAGE OF GERD FINANCED BY GOVERNMENT

Country	1998-99 %	2000-01 %	2002-03 %
Australia	45.8	45.5	44.4
Austria	37.8	39.6	40.9
Canada	30.4	29.7	33.3
Czech Republic	36.8	44.5	42.1
Finland	30.0	26.2	26.1
Germany	34.8	31.4	31.5
Hungary	56.2	49.5	58.5
Japan	19.3	19.6	18.2
Korea (a)	25.9	23.9	25.4
Poland	59.0	63.4	61.1
Slovak Republic	45.3	42.6	44.1
Spain	38.7	38.6	39.1
United Kingdom	30.6	28.9	26.9

United States of America	30.3	26.1	30.2
Total OECD	30.7	28.3	29.9

(a) Excluding R&D in the Social Sciences and Humanities.

Source: [OECD Main Science and Technology Indicators](#) 2004/1 (<http://www.oecd.org>), ABS Research and Experimental Development, [All Sector Summary](#), Australia (cat. no. 8112.0).

STATISTICAL NOTES

OECD Standards

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International comparability

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CHARACTERISTIC: SUPPORT FOR INNOVATION

INDICATOR: Value of venture capital drawdowns

The value of committed funds drawn down by investors at 30 June 2003 was \$4.8b an increase of 10% on the year before (\$4.4b at June 2002).

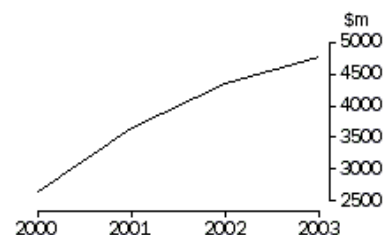
VENTURE CAPITAL DRAWDOWNS

	June 2000	June 2001	June 2002r	June 2003
Source of funds	\$m	\$m	\$m	\$m
Non-residents	314	353	342	328
Residents	2,335	3,301	4,026	4,462
Total	2,649	3,654	4,368	4,792

r revised

Source: ABS [Venture Capital, Australia](#) (cat. no. 5678.0).

VENTURE CAPITAL DRAWDOWNS



Source: ABS Venture Capital, Australia (cat. no. 5678.0).

STATISTICAL NOTES

Venture Capital Survey

See the [Explanatory Notes](#) from ABS cat. no. 5678.0 for information about the Venture Capital Survey including scope and coverage.

Definition

Venture capital is defined as high risk private equity capital for typically new, innovative or fast growing unlisted companies. A venture capital investment is usually of a short to medium-term investment with the potential of high capital gains on divestment (rather than long-term investment involving regular income streams). The venture capital sector is part of the infrastructure of a well developed private equity capital market.

Characteristics

Venture capital is an investment not only of money but of skills and time. As venture capitalists invest in a business they become part owners and may acquire a seat on the company's board of directors. They can provide support and advice on a range of management and technical issues to assist the company to develop to its full potential.

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HUMAN CAPITAL INDICATORS

A summary of the Human Capital indicators is presented below.

A more detailed view of each indicator (including more detailed data, definitions etc.) can be found by clicking on the indicator description shown below. Please note that the description of many of the indicators in this view has been shortened to fit. In such cases, the more detailed view for those indicators contains their full description.

Abbreviations used on this page may be found in the Framework release, see [Abbreviations](#) (cat. no. 1375.0). They are also explained in the detailed view of each indicator.

CHARACTERISTIC: STOCK OF SKILLED PEOPLE

[Proportion of all persons aged 15-64 with a non-school qualification](#)

	%	period	%	period
Bachelor degree or above	10.1	1993	18.1	2003

Knowledge workers as a proportion of employed persons	35.5	1997	39.2	2004
	person years	period	person years	period
Researchers devoted to R&D	43,174	1990-91	71,613	2002-03
Highest non-school qualification of employed persons by occupation				
Main field of highest non-school qualification by labour force status				

CHARACTERISTIC: FLOW OF SKILLED PEOPLE

	%	period	%	period
Participation in secondary and tertiary education				
Persons aged 15-19	73.4	1993	77.5	2003
	% employed	period	% employed	period
Graduate employment outcomes by qualification				
All university graduates	62.0	1991	67.0	2001

CHARACTERISTIC: LIFELONG LEARNING AND ACCESS TO EDUCATION AND TRAINING

	%	period	%	period
Proportion of population aged 15-64 in formal education			18.6	2003
Visits to public library facilities, per capita	4.8	1996-97	5.2	1999-2000
	'000	period	'000	period
Unmet demand for education by labour force characteristics				
Applied for a course of study and unable to gain placement	78.8	2002	81.6	2003

This section contains the following subsection :

- [Proportion of all persons aged 15-64 with a non-school qualification](#)
- [Highest non-school qualification of employed persons by occupation](#)
- [Knowledge workers as a proportion of employed persons](#)

[Researchers devoted to research and experimental development \(R&D\)](#)

[Main field of highest educational attainment by labour force status](#)

[Participation in secondary and tertiary education, proportion of relevant age group](#)

[Graduate outcomes by qualification, employment status](#)

[Proportion of population aged 15-64 enrolled in a course of study, by field of education and age](#)

[Unmet demand for education by labour force characteristics](#)

[Visits to public library facilities, per capita](#)

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CHARACTERISTIC: STOCK OF SKILLED PEOPLE

INDICATOR: Proportion of all persons aged 15-64 with a non-school qualification

The proportion of persons, aged 15-64 years, with a non-school qualification increased from 39% in 1994 to 51% in 2004. There has been a marked increase in the proportion of people aged 15-64 with a Bachelor degree or higher, from 12% in 1994 to 19% in 2004. The proportion of persons whose highest non-school qualification was an Advanced diploma or below has risen from 28% to 31% over the same period.

PROPORTION OF ALL PERSONS AGED 15-64 WITH A NON-SCHOOL QUALIFICATION(a)(b)

	1994	1996	1998	2000	2002	2003	2004
Level of highest non-school qualification	%	%	%	%	%	%	%
Bachelor degree or above	11.5	12.8	14.3	15.7	17.8	18.1	18.9
Advanced diploma or below	27.5	29.4	27.6	28.1	29.8	30.2	31.3

Total with non-school

qualifications (c)

Age Group (years)

15-24	21.8	23.2	22.1	22.4	25.1	25.7	25.9
25-34	46.6	50.1	51.6	54.0	59.1	60.4	63.2
35-44	48.4	52.2	50.7	52.0	56.4	57.5	58.9
45-54	42.8	46.2	45.6	48.9	54.0	54.5	57.1
55-64	33.6	37.1	36.1	38.6	44.2	45.6	47.9
Total(c)	39.0	42.3	41.9	43.8	48.2	49.1	50.9

(a) Non-school qualification refers to educational attainments other than those of pre-primary, primary or secondary education.

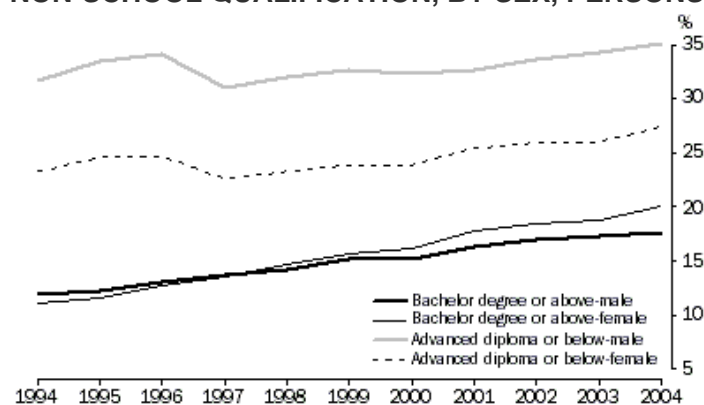
(b) Persons in a particular age group with a non-school qualification as a percentage of the total population in that age group.

(c) Includes persons whose highest non-school qualification was at a level not determined.

Break in series, 1997 computer assisted coding; 2001 ASCED.

Source: ABS [Education and Work, Australia](#), (cat. no. 6227.0).

LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION, BY SEX, PERSONS AGED 15-64 YEARS



Break in series, 1997 computer assisted coding; 2001 ASCED.

Source: ABS Survey of Education and Work.

STATISTICAL NOTES

Australian Standard Classification of Education

The [Australian Standard Classification of Education](#) (ASCED) (cat. no. 1272.0) is a national standard classification which can be applied to all sectors of the Australian education system including schools, vocational education and training and higher education.

Changes to the Survey of Education and Work

The ABS Survey of Education and Work, which is published in [Education and Work, Australia](#) (cat. no. 6227.0) was previously known as the Transition from Education to Work Survey. Data are collected in May of each year as a supplement to the ABS Labour Force Survey (LFS). Since 1994, there are two series breaks in the data collected on Level of Highest Non-school Qualification. Computer assisted coding was introduced in 1997; and in 2001, ASCED replaced the ABSCQ.

Please see the [Explanatory Notes](#) for ABS cat. no. 6227.0 for information regarding concepts, sources and methods, classifications and comparability issues of the time series.

Level of Highest Non-school Qualification

Non-school qualifications are awarded for educational attainments other than those of pre-primary, primary or secondary education. They include qualifications at the Postgraduate Degree level, Master Degree level, Graduate Diploma and Graduate Certificate level, Bachelor Degree level, Advanced Diploma and Diploma level, and Certificates I, II, III and IV levels. Non-school qualifications may be attained concurrently with school qualifications.

INTERNATIONAL COMPARISONS

SELECTED OECD COUNTRIES, EDUCATIONAL ATTAINMENT OF THE POPULATION, BY AGE (2002)

	At least upper secondary education(a) by age group					At least tertiary education (tertiary-type A education, tertiary-type B education and advanced research programmes) by age group				
	25-64	25-34	35-44	45-54	55-64	25-64	25-34	35-44	45-54	55-64
	%	%	%	%	%	%	%	%	%	%
Australia	61	73	62	58	46	31	36	32	30	23
Canada	83	89	86	82	69	43	51	43	41	32
Finland	75	88	85	71	52	33	40	38	30	23
Germany	83	85	86	84	77	23	21	26	25	21
Ireland	60	77	65	51	37	26	37	25	19	14
Japan	84	94	94	82	64	36	50	45	31	18

Korea	71	95	79	51	31	26	41	28	13	9
New Zealand	76	82	80	76	62	30	30	31	32	26
Sweden	82	91	87	79	67	33	39	34	31	26
United Kingdom(b)	64	70	65	62	56	27	31	27	26	20
United States of America	87	87	88	89	84	38	40	39	40	33
Country mean	65	75	69	61	50	24	28	24	21	16

(a) Excluding ISCED 3C short programmes.

(b) Not all ISCED 3 programmes meet minimum requirements for long ISCED 3C programmes.

Source: OECD, Education at a glance: OECD indicators, 2004 http://www.oecd.org/document/11/0,2340,en_2649_34515_33712011_1_1_1_1,00.html.

STATISTICAL NOTES

International Standard Classification of Education

The International Standard Classification of Education (ISCED) was developed by the United Nations Educational Scientific and Cultural Organisation (UNESCO) to facilitate comparisons of education statistics and indicators within and between countries. It was originally endorsed at the General Conference of UNESCO in 1978. The current version (ISCED 1997) was officially adopted in November 1997.

The 1997 International Standard Classification of Education (ISCED-97) introduced a multi-dimensional classification framework, allowing for the alignment of the educational content of programmes from different countries using multiple classification criteria. These dimensions include the type of subsequent education or destination to which the programme leads, the programme orientation (whether it be general or pre-vocational education, or vocational education) and the programme duration. For detailed notes see the OECD publication **Classifying Educational Programmes, Manual for ISCED 97 Implementation in OECD countries, Edition 1999**.

The ABS has designed ASCED to be as consistent with ISCED as possible. However, the needs of users and producers of statistics on education in Australia, and other factors unique to the Australian education system, have meant that total consistency has not

been possible. Like ASCED, ISCED has separate dimensions of Level of Education and Field of Education. Correspondence tables providing comprehensive information on the relationship between ASCED and ISCED 1997 are available on the ABS web site; [ABS Australian Standard Classification of Education](#) (cat. no. 1272.0)

Notes on specific countries

United Kingdom attainment data at upper secondary level (ISCED 3) include a sizeable proportion of persons (about 7 per cent of the population) whose highest level of attainment will in general have been reached at age 16. Although the programmes which they have completed do not formally satisfy the duration criterion for the completion of ISCED level 3, they can lead to a qualification that the United Kingdom considers to be the same attainment level as that conferred by completion of a number of programmes which do satisfy the ISCED criterion.

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CHARACTERISTIC: STOCK OF SKILLED PEOPLE

INDICATOR: Highest non-school qualification of employed persons by occupation.

EMPLOYED PERSONS, LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION(a) by Occupation: May 2004

Occupation	Post-graduate degree '000	Graduate diploma /Graduate certificate '000	Bachelor degree '000	Advanced diploma / Diploma '000	Certificate III / IV '000	Certificate I / II '000	Certificate n.f.d. '000	Without non-school qualification '000	Total(b) '000
Managers and administrators	38.9	27.6	141.5	76.3	109.7	35.2	7.7	208.0	650.8
Professionals	220.3	188.3	842.1	232.0	95.8	39.6	9.3	192.1	1,830.1
Associate professionals	33.1	28.2	177.0	159.8	233.9	78.4	26.0	397.4	1,145.0
Tradespersons and related workers	*2.6	*4.3	30.6	50.4	656.2	52.9	19.9	378.1	1,207.1

Advanced clerical and service workers	*2.9	6.8	43.0	41.3	37.5	60.3	9.5	173.0	377.2
Intermediate clerical, sales and service workers	13.2	18.2	153.0	158.5	236.3	144.2	47.1	816.6	1,599.6
Intermediate production and transport workers	*4.8	*3.7	25.3	25.0	141.3	44.4	15.1	516.0	783.4
Elementary clerical, sales and service workers	*1.6	*4.9	57.1	47.4	80.8	68.5	18.6	653.8	937.0
Labourers and related workers	*3.1	*3.4	27.2	30.7	106.7	56.3	23.1	604.2	861.5

* estimate has a relative standard error between 25% and 50% and should be used with caution

(a) Non-school qualification refers to educational attainment other than those of primary, pre-primary or secondary education.

(b) Includes level not determined.

Source: ABS [Education and Work, Australia](#), May 2004 (cat. no. 6227.0).

STATISTICAL NOTES

Australian Standard Classification of Education

The [Australian Standard Classification of Education](#) (ASCED) (cat. no. 1272.0) is a national standard classification which can be applied to all sectors of the Australian education system including schools, vocational education and training and higher education.

Employed persons

Persons aged 15-64 years who, during the reference week: worked for one hour or more for pay, profit, commission or payment in kind, in a job or business or on a farm (comprising employees, employers and own account workers); or worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or were employees who had a job but were not at work and were: away from work for less than four weeks up to the end of the reference week; or away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four week period to the end of the reference week; or away from work as a standard work or shift arrangement; or on strike or locked out; or on workers' compensation and expected to return to their job; or were employers or own account workers who had a job, business or farm, but were not at work.

Level of Highest Non-school Qualification

Non-school qualifications are awarded for educational attainments other than those of pre-primary, primary or secondary education. They include qualifications at the Postgraduate Degree level, Master Degree level, Graduate Diploma and Graduate Certificate level, Bachelor Degree level, Advanced Diploma and Diploma level, and Certificates I, II, III and IV levels. Non-school qualifications may be attained concurrently with school qualifications.

Occupation

From August 1996, occupation has been classified according to the [Australian Standard Classification of Occupations](#) (ASCO), Second Edition 1996, (cat. no. 1220.0).

Scope

For more information refer to [Explanatory Notes](#) from ABS Education and Work, Australia, May 2004, (cat. no. 6227.0) and the [Labour Force Survey](#).

The Labour Force Framework

The labour force is the most widely used measure of the economically active population. The term 'labour force' as defined in the international standards is associated with a particular approach to the measurement of employment and unemployment. Essentially this approach is the categorisation of persons according to their activities during a short reference period by using a specific set of priority rules.

The labour force framework classifies the in-scope population into three mutually exclusive categories, at a given moment in time: employed; unemployed; and not in the labour force. The employed and unemployed categories together make up the labour force which gives a measure of the number of persons contributing to, or willing to contribute to, the supply of labour at that time. The third category (not in the labour force) represents the currently inactive population.

For more information see ABS [Labour Statistics: Concepts Sources and Methods](#), (cat. no. 6102.0 2001).

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Knowledge-Based Economy
and Society \(Media Release\)](#)[Contents](#) >> [Human Capital Indicators](#) >> Knowledge workers as a proportion of employed persons

CHARACTERISTIC: STOCK OF SKILLED PEOPLE

INDICATOR: Knowledge workers as a proportion of employed persons

Knowledge workers now represent 39.2% of all employed persons in the Australian labour force. This indicates a strong ability to create and use knowledge throughout the economy. Professionals and associate professionals, in particular, have steadily increased as a proportion of the labour force over the last six years, increasing from 27.9 in 1997 to 31.3% in 2004.

KNOWLEDGE WORKERS AS A PROPORTION OF EMPLOYED PERSONS(a)

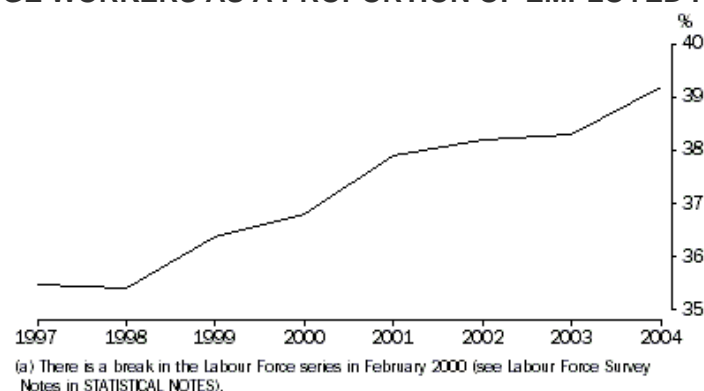
	1997 %	1998 %	1999 %	(b)2000 %	2001 %	2002 %	2003 %	2004 %
Managers and Administrators	7.6	7.4	7.3	7.2	7.7	7.6	7.3	7.9
Professionals	17.3	17.7	17.9	18.2	18.6	18.7	18.7	19.0
Associate Professionals	10.7	10.3	11.1	11.4	11.7	11.8	12.3	12.4
Total Knowledge Workers	35.5	35.4	36.4	36.8	37.9	38.2	38.3	39.2

(a) Estimates from 1997 onwards have been revised using updated population benchmarks based on results from the 2001 Census of Population and Housing.

(b) There is a break in the Labour Force series in February 2000 (see Labour Force Survey Notes in STATISTICAL NOTES).

Source: ABS [Labour Force Australia](#) (cat. no. 6202.0) (February, May, August, November).

KNOWLEDGE WORKERS AS A PROPORTION OF EMPLOYED PERSONS(a)



Source: ABS [Labour Force Australia](#) (cat. no. 6202.0) (February, May, August, November).

STATISTICAL NOTES

Knowledge workers

Knowledge workers are defined here as those classified as managers and administrators, professionals and associate professionals in the Australian Standard Classifications of Occupations (ASCO). This definition was also used by the Department of Industry, Tourism and Resources in its publication, **Australia as a Modern Economy: Some statistical indicators, 2002** and is compatible with the Asia-Pacific Economic Co-operation (APEC) definition in **Towards Knowledge-based Economies in APEC, 2000**.

The Labour Force Framework

The labour force is the most widely used measure of the economically active population, that is, the labour supply available for the production of economic goods and services in a given period. The term 'labour force' as defined in the international standards is associated with a particular approach to the measurement of employment and unemployment. Essentially this approach is the categorisation of persons according to their activities during a short reference period by using a specific set of priority rules. The labour force framework classifies the in-scope population into three mutually exclusive categories, at a given moment in time: employed; unemployed; and not in the labour force. The employed and unemployed categories together make up the labour force which gives a measure of the number of persons contributing to, or willing to contribute to, the supply of labour at that time. The third category (not in the labour force) represents the currently inactive population.

For more information see ABS [Labour Statistics: Concepts Sources and Methods](#), (cat. no. 6102.0).

Employed Persons

Employed persons include all persons aged 15 years and over who, during the reference week: worked for one hour or more for pay, profit, commission or payment in kind in a job or business, or on a farm (comprising employees, employers and own account

workers); or worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or were employees who had a job but were not at work and were: away from work for less than four weeks up to the end of the reference week; or away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four week period to the end of the reference week; or away from work as a standard work or shift arrangement; or on strike or locked out; or on workers' compensation and expected to return to their job; or were employers or own account workers, who had a job, business or farm, but were not at work.

Labour Force Survey notes

Labour Force Survey occupation data are classified, from August 1996, according to the Australian Standard Classification of Occupations (ASCO) Second Edition, a detailed description of which appears in [Australian Standard Classification of Occupations, Second Edition](#) (cat. no. 1220.0).

As a result of changes in coding methods, estimates classified by industry, occupation and status in employment data from February 2000 onwards are not strictly comparable with earlier periods. For details on the changes to industry and occupation, in particular associate professionals, refer to the [ABS Information Paper: Forthcoming Changes: Industry, Occupation and Status in Employment Data](#), (cat. no. 6203.0.)

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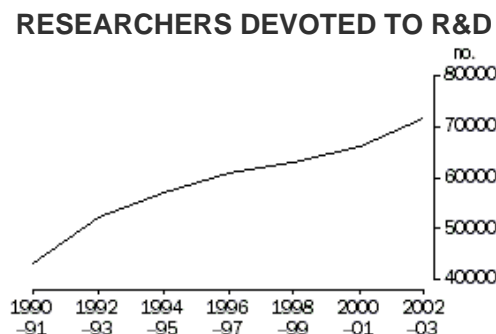
CHARACTERISTIC: STOCK OF SKILLED PEOPLE

INDICATOR: Researchers devoted to research and experimental development (R&D)

There has been an increase of 66% in the number of person years of R&D effort by researchers from 1990–91 to 2002–03.

RESEARCHERS DEVOTED TO R&D

	1990–91	1992–93	1994–95	1996–97	1998–99	2000–01	2002–03
Sector	Person years	Person years	Person years	Person years	Person years	Person years	Person years
Business	12,604	13,943	14,903	15,259	14,772	16,221	18,891
Commonwealth Government	4,988	5,522	4,431	4,526	3,879	4,418	3,739
State/territory government	4,292	4,091	4,376	4,498	4,640	4,306	4,297
Higher Education	20,666	27,914	32,272	35,472	38,137	39,507	42,780
Private Non-profit	624	687	892	1,286	1,437	1,549	1,906
Total	43,174	52,157	56,873	61,041	62,865	66,002	71,613



Source: ABS [Research and Experimental Development, All Sector Summary](#), Australia (cat. no.8112.0).

STATISTICAL NOTES

The Australian Standard Research Classification

[The Australian Standard Research Classification](#) (ASRC) is the collective name for a set of three related classifications developed for use in the measurement and analysis of research and experimental development (R&D) undertaken in Australia, both in the public and private sectors. It allows the comparison of R&D data between sectors of the Australian economy (e.g. general government, private non-profit organisations, business enterprises and educational institutions).

R&D

R&D is defined in accordance with the Organisation for Economic Co-operation and Development (OECD) standard as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.

R&D Surveys

The [R&D Business survey](#) is conducted annually and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by businesses in Australia.

The [R&D Higher Education survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by higher education organisations in Australia.

The [R&D General government survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by government organisations in Australia.

The [R&D Private non-profit sector survey](#) is conducted biennially and collects estimates of Research and Experimental Development expenditure and human resources devoted to R&D by private non-profit organisations in Australia.

Sectors:

The sector classification used in the compilation of R&D statistics is adapted from the guidelines specified by the OECD for use in the conduct of R&D surveys.

Business sector

This sector includes all businesses whose primary activity is the production of goods or services for sale to the general public at a price intended to cover at least the cost of production, and the private non-profit institutions mainly serving them. The Business sector for the R&D survey excludes businesses mainly engaged in Agriculture, forestry, and fishing (i.e. industries in Division A of the Australian and New Zealand Standard Industrial Classification ([ANZSIC](#)), 1993 (cat. no. 1292.0)), partly because of collection difficulties and partly because such businesses are believed to have very low R&D activity (agricultural R&D activity is generally carried out by specialised research institutes not included in ANZSIC Division A).

Government sector

This sector includes all Commonwealth, state and local government departments and authorities. The Government sector for the R&D survey excludes local government organisations because it is considered that their contribution to total R&D activity would be minimal. Public sector organisations mainly engaged in higher education (e.g. universities) are included in the Higher education sector whilst those mainly engaged in trading or financial activities are included in the Business sector.

Higher education sector

This sector includes all universities and other institutions of post-secondary education whatever their source of finance or legal status. The Higher education sector for the R&D survey excludes non-university post-secondary education institutions (e.g. Technical and Further Education colleges) because it is considered that their contribution to total R&D activity would be minimal.

Private non-profit sector

This sector includes private or semi-public incorporated organisations which are established with the intention of not making a profit.

Human resources devoted to R&D

The effort of researchers, technicians and other staff directly involved with R&D activity. Overhead staff (e.g. administrative and general service employees such as personnel officers, janitors etc.) whose work indirectly supports R&D, are excluded.

Researchers

Those involved with the conception and/or development of new knowledge, products, processes, methods and systems, and in the management of the projects concerned.

Indicator originally proposed in Framework

The ABS Discussion Paper, [Measuring a knowledge-based economy and society, An Australian Framework](#) (cat. no. 1375.0) proposed the indicator 'Researchers as a proportion of the labour force'.

INTERNATIONAL COMPARISONS**SELECTED OECD COUNTRIES, RESEARCHERS DEVOTED TO R&D**

	1998-99	2000-01	2002-03
	person years	person years	person years

Australia	62,865	66,002	71,613
Canada	95,390	107,300	na
Czech Republic	12,566	13,852	14,974
Finland	30,431	34,847	38,632
France	155,727	172,070	na
Germany	237,712	257,874	264,685
Hungary	11,731	14,406	14,965
Japan	652,845	647,572	646,547
Korea (a)	92,541	108,370	141,917
Netherlands	39,081	41,896	na
Poland	56,179	55,174	56,725
Slovak Republic	10,145	9,955	9,181
Spain	60,269	76,670	83,318

(a) Excluding R&D in the Social Sciences and Humanities.

Source: [OECD Main Science and Technology Indicators](http://www.oecd.org), 2004/1 (<http://www.oecd.org>), ABS [Research and Experimental Development, All Sector Summary](#), Australia (cat. no. 8112.0).

RESEARCHERS(a) PER 10,000 LABOUR FORCE BY SECTOR OF EMPLOYMENT

	Business enterprise(k)			Government				Higher education			
	1981	1991	1999	1981	1991	1999	2001	1981	1991	1999	2001
Australia(b,j)	5.1	14.9	15.1	9.9	11.0	9.5	9.2	19.9	24.4	40.9	40.7
						4.7				21.1	
Canada	12.1	20.9	31.4	4.5	5.8		na	14.8	19.9		na
Denmark (j)	8.7	17.7	28.1	6.6	8.8	13.7	12.7	9.8	14.2	20.0	20.4
Finland	11.1	20.1	40.9	9.4	12.6	16.0	17.3	na	21.2	40.3	41.9
France(c,j)	14.8	23.8	28.1	6.6	10.4	9.3	9.8	13.8	16.9	21.7	23.2
Germany(d)	27.2	(e)35.6	34.0	6.3	(e)9.4	9.6	9.3	10.1	(e)15.7	16.5	17.0
Ireland (j)	4.7	15.7	(f)33.1	5.0	2.6	1.8	4.2	6.4	18.3	15.0	12.3
Japan(g)	(h)33.8	(h)52.4	64.0	5.1	4.6	4.6	5.0	14.3	16.5	26.3	29.7
Netherlands(c,j)	14.9	na	23.3	8.0	na	10.3	7.4	10.8	17.8	15.9	19.4
New Zealand	na	8.3	(f)9.1	na	9.3	8.6	na	na	11.4	26.5	na
Sweden	22.1	(i)29.4	52.1	3.3	(i)3.8	5.5	5.1	15.7	25.3	33.4	35.5
United Kingdom	28.8	27.8	31.6	7.5	(i) .2	5.1	na	9.3	10.1	17.0	na
United States of America(c)	45.0	60.4	70.0	(i) 5.3	(i) .5	3.4	na	8.9	9.1	13.2	na

European Union(c,j)	16.6	(e)22.2	25.3	5.3	(e)7.1	7.4	7.4	10.6	(e)14.5	(f)18.0	18.3
Total OECD(c)	27.0	(e)35.0	38.7	5.2	(e)5.3	(f)4.7	na	10.7	(e)12.4	(f)15.5	na

(a) Or university graduates.

(b) 1998 instead of 1999, 1990 instead of 1991.

(c) 1998 instead of 1999.

(d) Figures for Germany and zone totals from 1991 onwards refer to unified Germany.

(e) Break in series from previous year for which data available.

(f) 1997 instead of 1999.

(g) Adjusted by OECD up to 1995.

(h) Overestimated.

(i) Underestimated.

(j) 2000 instead of 2001.

(k) 2001 not available.

na not available

Source: OECD Science, Technology and Industry Scoreboard, OECD R&D and MSTI database, May 2003 (www.oecd.org).

STATISTICAL NOTES

OECD Standards

Data have been collected and presented in line with the standard OECD methodology of R&D statistics entitled **The Measurement of Scientific and Technological Activities: Proposed Standard Practice for Surveys of Research and Experimental Development–Frascati Manual 2002 (OECD)**.

When measuring R&D performance in the higher education sector and its evolution, it should be remembered that many of the figures for this sector are estimates by the national authorities and that evaluation methods are periodically revised. Furthermore, certain national characteristics may strongly influence R&D performance by government and higher education.

Figures for the government and higher education sectors in the United States of America are probably underestimated as public sector R&D only covers federal government activities, not those of individual states and local government, and researchers exclude military personnel in the government sector since 1985. In the higher education sector, R&D in the humanities is not included, and since 1991 capital expenditures have been excluded.

In Sweden, too, the government sector, which includes only the central administrative units, is seriously underestimated; inclusion of county and local units might double the figures.

In Japan figures for R&D personnel in the higher education sector before 1996 are overestimated by international standards, as researchers were counted in terms of the number of people employed in R&D instead of full-time-equivalent (FTE) staff.

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CHARACTERISTIC: STOCK OF SKILLED PEOPLE

INDICATOR: Main field of highest non-school qualification by labour force status

The percentage of persons employed part-time varied from 33% for those whose highest non-school qualification was in the field of Health, to 7% for those whose main field of highest non-school qualification was Engineering and related technologies. Females experienced a higher percentage of part-time employment, whatever the field of highest non-school qualification.

PERSONS WITH A NON-SCHOOL QUALIFICATION, MAIN FIELD OF HIGHEST QUALIFICATION BY LABOUR FORCE STATUS, MAY 2004(a)

Main field of highest non-school qualification	Employed full-time %	Employed part-time %	Unemployed %	Not in the labour force %
Natural and physical sciences	63.3	17.2	2.9	16.6
Information technology	63.5	15.8	7.0	13.7
Engineering and related technologies	79.0	6.7	2.6	11.7
Architecture and building	79.6	8.2	2.1	10.2

Agriculture, environmental & related studies	72.2	13.1	*4.0	10.6
Health	49.0	32.7	1.9	16.5
Education	56.4	25.7	1.8	16.1
Management and commerce	60.5	19.3	3.7	16.4
Society and culture	54.8	24.6	3.2	17.3
Creative arts	50.8	28.4	4.0	16.8
Food, hospitality and personal services	47.9	24.0	4.9	23.1

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Labour force status as a proportion of all persons with each main field of highest non-school qualification.

Source: ABS [Survey of Education and Work](#), May 2004.

FEMALES WITH A NON-SCHOOL QUALIFICATION, MAIN FIELD OF HIGHEST QUALIFICATION BY LABOUR FORCE STATUS, MAY 2004(a)

Main field of highest non-school qualification	Employed full-time %	Employed part-time %	Unemployed %	Not in the labour force %
Natural and physical sciences	48.1	25.5	*2.2	24.2
Information technology	47.7	23.6	*5.7	23.0
Engineering and related technologies	41.7	20.7	*4.6	32.9
Architecture and building	44.2	31.5	**2.0	22.4
Agriculture, environmental & related studies	51.0	24.3	**1.9	22.8
Health	39.9	39.0	1.7	19.4
Education	48.7	30.5	2.1	18.7
Management and commerce	48.0	26.6	3.7	21.7
Society and culture	45.8	29.8	3.4	21.0
Creative arts	39.8	35.6	*3.0	21.6
Food, hospitality and personal services	32.2	32.7	4.4	30.8

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Labour force status as a proportion of all persons with each main field of highest non-school qualification.

Source: ABS [Survey of Education and Work](#), May 2004.

MALES WITH A NON-SCHOOL QUALIFICATION, MAIN FIELD OF HIGHEST QUALIFICATION BY LABOUR FORCE STATUS , MAY 2004(a)

Main field of highest non-school qualification	Employed full-time %	Employed part-time %	Unemployed %	Not in the labour force %
Natural and physical sciences	75.5	10.6	*3.4	10.6
Information technology	72.2	11.5	7.7	8.5
Engineering and related technologies	81.7	5.7	2.4	10.2
Architecture and building	82.4	6.3	2.1	9.2
Agriculture, environmental & related studies	78.8	9.7	*4.7	6.8
Health	78.6	12.0	*2.5	7.0
Education	80.3	10.6	*1.1	8.0
Management and commerce	81.6	7.2	3.6	7.6
Society and culture	74.0	13.5	2.8	9.6
Creative arts	66.5	18.1	5.4	9.9
Food, hospitality and personal services	72.8	10.3	5.9	11.0

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Labour force status as a proportion of all persons with each main field of highest non-school qualification.

Source: ABS [Survey of Education and Work](#), May 2004.

STATISTICAL NOTES

Employed persons

Persons aged 15-64 years who, during the reference week: worked for one hour or more for pay, profit, commission or payment in kind, in a job or business or on a farm (comprising employees, employers and own account workers); or worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or were employees who had a job but were not at work and were: away from work for less than four weeks up to the end of the reference week; or away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four week period to the end of the reference week; or away from work as a standard work or shift arrangement; or on strike or locked out; or on workers' compensation and expected to return to their job; or were employers or own account workers who had a job, business or farm, but were not at work.

Field of Education

Field of Education is defined as the subject matter of an educational activity. It is categorised according to the [Australian Standard Classification of Education](#)(ASCED)(cat.no. 1272.0) Field of Education classification.

Non-school qualification

Non-school qualifications are awarded for educational attainments other than those of pre-primary, primary or secondary education. They include qualifications at the Postgraduate Degree level, Master Degree level, Graduate Diploma and Graduate Certificate level, Bachelor Degree level, Advanced Diploma and Diploma level, and Certificates I, II, III and IV levels. Non-school qualifications may be attained concurrently with school qualifications.

The Labour Force Framework

The labour force is the most widely used measure of the economically active population. The term 'labour force' as defined in the international standards is associated with a particular approach to the measurement of employment and unemployment. Essentially this approach is the categorisation of persons according to their activities during a short reference period by using a specific set of priority rules.

The labour force framework classifies the in-scope population into three mutually exclusive categories, at a given moment in time: employed; unemployed; and not in the labour force. The employed and unemployed categories together make up the labour force which gives a measure of the number of persons contributing to, or willing to contribute to, the supply of labour at that time. The third category (not in the labour force) represents the currently inactive population.

For more information see ABS [Labour Statistics: Concepts Sources and Methods](#), cat. no. 6102.0 2001.

Indicator originally proposed in Framework

The ABS Discussion Paper, [Measuring a knowledge-based economy and society, An Australian Framework](#) (cat. no. 1375.0) proposed the indicator 'Labour force status of those with science and technology qualifications'. Main field of highest non-school qualification includes all main fields of education including science and technology.

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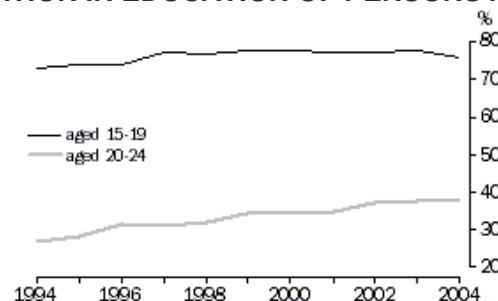
The level of participation in education of 15–19 year olds was 76% in 2004, down slightly on earlier years. Participation in education includes all persons enrolled for a course of study at an educational institution during the survey month. Included are schools, higher education establishments, colleges of technical and further education, public and private colleges.

[illegible]

(a) Data for 1994 and 1995 refer to courses leading to recognised qualifications only.

Source: ABS [Survey of Education and Work](#).

PARTICIPATION IN EDUCATION OF PERSONS AGED 15–24



Data for 1994 and 1995 refer to courses leading to recognised qualifications only.

Source: ABS Survey of Education and Work.

STATISTICAL NOTES

Educational institution

This is any institution with a primary role of education. Included are schools, higher education establishments, colleges of technical and further education, public and private colleges. Excluded are institutions whose primary role is not education, for example, hospitals.

Higher education student

A higher education student is a person who was enrolled (either full-time, part-time or externally) in a higher education institution in the survey month.

Data for the proportion of 15–24 year olds attending higher education refers to persons aged 15–24 years enrolled at higher education institutions as a percentage of the civilian population in the same age group.

Participation in education

The education participation rate for any group, is the number of persons participating in education expressed as a percentage of the civilian population in the same group.

For information on concepts, sources and methods see the [Explanatory Notes](#) from ABS Education and Work, Australia (cat. no. 6227.0).

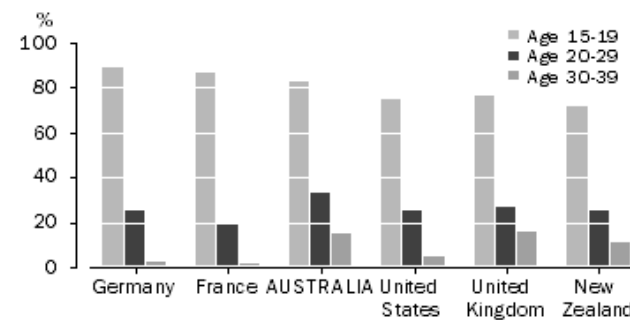
INTERNATIONAL COMPARISONS

EDUCATIONAL PARTICIPATION SELECTED OECD COUNTRIES 2002

	15—19 years %	20—29 years %	30—39 years %
Australia	82.6	32.9	15.2
France	86.7	19.6	1.8
Germany	89.2	25.5	2.8
United States of America	74.8	25.2	4.6
New Zealand	72.1	25.4	10.9
United Kingdom	76.8	26.8	16.2
OECD Average	79.4	22.7	5.4

Source: [OECD Education at a Glance: OECD Indicators](#).

EDUCATIONAL PARTICIPATION SELECTED OECD COUNTRIES 2002



Source: [OECD Education at a Glance: OECD Indicators](#).

STATISTICAL NOTES

International Standard Classification of Education

The International Standard Classification of Education (ISCED) was developed by the United Nations Educational Scientific and Cultural Organisation (UNESCO) to facilitate comparisons of education statistics and indicators within and between countries. It was originally endorsed at the General Conference of UNESCO in 1978. The current version (ISCED 1997) was officially adopted in November 1997.

The 1997 International Standard Classification of Education (ISCED-97) introduced a multi-dimensional classification framework, allowing for the alignment of the educational content of programmes from different countries using multiple classification criteria. These dimensions include the type of subsequent education or destination to which the programme leads, the programme orientation (whether it be general or pre-vocational education, or vocational education) and the programme duration. For detailed notes see the OECD publication **Classifying Educational Programmes, Manual for ISCED 97 Implementation in OECD countries, Edition 1999**.

The ABS has designed ASCED to be as consistent with ISCED as possible. However, the needs of users and producers of statistics on education in Australia, and other factors unique to the Australian education system, have meant that total consistency has not been possible. Like ASCED, ISCED has separate dimensions of Level of Education and Field of Education. Correspondence tables providing comprehensive information on the relationship between ASCED and ISCED 1997 are available on the ABS Website; [ABS Australian Standard Classification of Education](#) (ABS cat. no. 1272.0)

For more international comparisons see [OECD Education at a glance: indicator tables at http://www.oecd.org](http://www.oecd.org).

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1377.0 - Measures of a knowledge-based economy and society, Australia, 2003

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Knowledge-Based Economy
and Society \(Media Release\)](#)[Contents](#) >> [Human Capital Indicators](#) >> Graduate outcomes by qualification, employment status

CHARACTERISTIC: FLOW OF SKILLED PEOPLE

INDICATOR: Graduate outcomes by qualification, employment status

Of the 202,200 recent university graduates in 2003, 65% were employed four months after completing their qualification. Since 1993, the proportion of university graduates unemployed four months after their course ended has declined (from 18% in 1993 to 13% in 2003), while the proportion of those not in the labour force remained relatively constant (24% in 1993 and 22% in 2003). In 2003, a greater proportion of recent bachelor graduates were unemployed and not in the labour force than were postgraduates.

LABOUR FORCE STATUS OF RECENT UNIVERSITY GRADUATES

	Employed full-time	Employed part-time	Employed Total	Unemployed	Not in labour force
	1993				
	%	%	%	%	%
Postgraduates	68.0	7.0	75.0	14.2	10.8

Bachelor graduates	47.6	5.3	52.9	19.5	27.5
All university graduates	52.4	5.7	58.1	18.3	23.6

2003

	%	%	%	%	%
Postgraduates	68.3	9.9	78.2	10.3	11.6
Bachelor graduates	52.9	6.1	59.0	14.1	27.0
All university graduates	57.5	7.2	64.7	13.0	22.4

Source: Graduate Careers Council of Australia (GCCA).

STATISTICAL NOTES

Data are from the Graduate Destination Survey conducted by the [Graduate Careers Council of Australia](#) (GCCA), which is a census collecting data on people who graduated from university in the previous calendar year. The survey is conducted throughout the year and sent to graduates approximately four months after the completion of their qualification. 'University graduate' refers to all those who graduated from a university in the previous year. 'Bachelor graduate' refers to those individuals who completed a Bachelor degree (Pass, Honours or Graduate) or three-year Diploma; 'Postgraduate' refers to those individuals who completed a Doctorate, Masters (by coursework or research), Graduate or Postgraduate diploma, or Graduate certificate. It should be noted that the Graduate Destination Survey consistently obtains response rates of only around 50% which has implications on overall data quality.

INTERNATIONAL COMPARISONS

SELECTED OECD COUNTRIES, UNEMPLOYMENT RATE BY LEVEL OF EDUCATIONAL ATTAINMENT, 25–64 YEARS, 2002

	Below Upper Secondary	Upper Secondary and post- secondary non-tertiary education	Tertiary type B education	Tertiary type A and advanced research programmes	All levels of education
	%	%	%	%	%
FEMALES					
Australia	6.3	4.9	4.9	2.4	4.8
Canada	10.3	6.7	4.5	4.6	6.0

France	13.1	8.8	4.6	5.7	9.0
Germany	13.0	8.7	5.7	4.6	8.6
Japan	4.6	5.1	3.9	4.7	4.8
Korea	1.4	2.1	3.2	1.9	1.9
New Zealand	5.2	4.1	3.6	3.0	4.0
United Kingdom	6.4	4.0	1.8	2.1	3.6
United States of America	10.6	5.1	3.1	2.6	4.6

MALES

Australia	8.6	4.0	4.5	2.8	5.2
Canada	11.0	6.6	5.4	4.9	6.7
France	10.6	5.3	5.4	5.3	6.9
Germany	17.7	9.2	4.5	4.0	8.8
Japan	7.9	5.5	3.2	4.4	5.1
Korea	2.9	3.2	4.5	2.9	3.2
New Zealand	5.9	2.8	3.7	3.2	3.7
United Kingdom	10.4	4.1	2.8	2.7	4.4
United States of America	9.9	6.2	4.3	3.0	5.5

Source: Labour Market Statistics- Indicators, OECD Corporate Data Environment
<http://www1.oecd.org/scripts/cde/members/lfsindicatorsauthenticate.asp>

STATISTICAL NOTES

International Standard Classification of Education

The International Standard Classification of Education (ISCED) was developed by the United Nations Educational Scientific and Cultural Organisation (UNESCO) to facilitate comparisons of education statistics and indicators within and between countries. It was originally endorsed at the General Conference of UNESCO in 1978. The current version (ISCED 1997) was officially adopted in November 1997.

The 1997 International Standard Classification of Education (ISCED-97) introduced a multi-dimensional classification framework, allowing for the alignment of the educational content of programmes from different countries using multiple classification criteria. These dimensions include the type of subsequent education or destination to which the programme leads, the programme orientation (whether it be general or pre-vocational education, or vocational education) and the programme duration. For detailed notes see the OECD publication **Classifying Educational Programmes, Manual for ISCED 97 Implementation in OECD countries, Edition 1999**.

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CHARACTERISTIC: LIFELONG LEARNING AND ACCESS TO EDUCATION

INDICATOR: Proportion of population aged 15-64 enrolled in a course of study, by field of education and by age

Aside from Mixed field programmes which are mainly comprised of school level study, the most commonly reported main field of education in May 2004 was Management and commerce (19% of all people studying), followed by Society and culture (13%). The least common field of education was Agriculture, environmental and related studies, which accounted for only 2% of all people studying.

PERSONS ENROLLED IN A COURSE OF STUDY IN MAY 2004, MAIN FIELD OF EDUCATION

Main field of education	15-19 %	20-24 %	25-34 %	35-44 %	45-54 %	55-64 %	Total %
Natural and physical sciences	1.7	5.5	4.5	*1.0	*1.8	**1.5	2.9
Information technology	2.2	8.3	5.4	4.2	6.9	*8.7	4.7
Engineering and related technologies	4.6	10.6	7.3	7.1	5.2	*4.2	6.6
Architecture and building	2.3	4.5	3.3	2.4	**0.8	**0.2	2.8
Agriculture, environmental and related studies	0.8	2.1	2.2	3.2	*3.0	**0.6	1.7

Health	2.7	8.0	8.1	9.6	11.3	*5.2	6.0
Education	1.1	6.4	5.2	7.3	9.1	*7.0	4.2
Management and commerce	6.4	24.8	29.7	32.8	25.7	24.7	18.6
Society and culture	4.2	16.2	21.3	20.9	25.1	23.8	13.1
Creative arts	3.0	7.0	5.8	3.8	4.1	*4.5	4.5
Food, hospitality and personal services	2.0	2.5	*1.3	*1.6	*1.3	0.0	1.9
Mixed field programmes (a)	68.0	1.6	*1.9	*1.2	*0.8	**2.1	30.2
Total (b)	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Estimate has a relative standard error of between 25% and 50% and should be used with caution

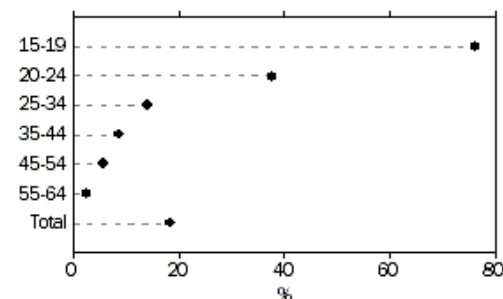
** Estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Includes persons studying towards Year 12 or below.

(b) Includes persons whose field of study was not determined.

Source: ABS [Survey of Education and Work](#), May 2004.

ALL PERSONS WHO STUDIED IN MAY 2004(a)(b)



(a) Persons in a particular age group enrolled in a course of study as a percentage of the total population in that age group.

(b) Includes persons studying towards Year 12 or below.

Source: ABS Survey of Education and Work, May 2004.

STATISTICAL NOTES

Australian Standard Classification of Education

The [Australian Standard Classification of Education](#) (ASCED) (cat. no. 1272.0) is a national standard classification which can be applied to all sectors of the Australian education system including schools, vocational education and training and higher education.

Field of education

Field of education is defined as the subject matter of an educational activity. It is categorised according to the Australian Standard Classification of Education (ASCED) [Field of Education classification](#).

Enrolled in a course of study

Refers to persons enrolled for a course of study in the survey month at an educational institution. An educational institution is any institution whose primary role is education. Included are schools, higher education establishments, colleges of technical and further

education, public and private colleges, etc. Excluded are institutions whose primary role is not education, for example, hospitals.

INTERNATIONAL COMPARISONS

PARTICIPATION RATE IN CONTINUING EDUCATION AND TRAINING DURING ONE YEAR FOR 25 TO 64 YEAR OLDS, BY LEVEL OF EDUCATION

Selected OECD Countries		Lower secondary education	Upper secondary and post secondary non-tertiary education	Tertiary education	All levels of education
Australia IALS 1995-96	M+F	23	39	60	36
	Males	25	38	41	37
	Females	22	41	61	34
Canada 1997	M+F	12	25	43	29
	Males	13	25	40	28
	Females	12	26	45	30
Denmark IALS 1998-99	M+F	36	59	75	56
	Males	38	55	64	54
	Females	35	64	81	59
Finland 2000	M+F	36	52	76	55
	Males	32	46	76	50
	Females	41	58	76	59
Germany 2000	M+F	16	39	60	42
	Males	20	40	60	45
	Females	14	39	58	39
Ireland IALS 1995-96	M+F	13	30	50	22
	Males	12	28	32	20
	Females	13	32	55	24
Netherlands IALS 1994-95	M+F	24	42	52	36
	Males	24	44	39	38
	Females	24	39	52	34
New Zealand IALS 1995-96	M+F	36	55	69	46
	Males	38	54	55	48
	Females	35	55	67	45
Sweden	M+F	36	58	70	54

IALS 1994-95	Males	39	56	61	53
	Females	34	61	74	56
United Kingdom	M+F	33	58	75	45
IALS 1995-96	Males	33	54	64	46
	Females	33	64	80	44
United States of America	M+F	24	46	69	51
2001	Males	23	41	65	47
	Females	25	51	73	55

IALS International Adult Literacy Survey 1994-1998

Source: OECD, [Education at a Glance: OECD Indicators](#), 2002, Original source: International Literacy Survey 1994-1998 and national household surveys on adult education and training.

STATISTICAL NOTES

Education at a Glance: OECD Indicators 2002, Annex 3: Sources, Methods and Technical Notes has detailed information on specific countries and relevant methodology (<http://www.oecd.org/els/education/eag2002>).

International Standard Classification of Education

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and Society \(Media Release\)](#)[Contents](#) >> [Human Capital Indicators](#) >> Unmet demand for education by labour force characteristics

CHARACTERISTIC: LIFELONG LEARNING AND ACCESS TO EDUCATION

INDICATOR: Unmet demand for education by labour force characteristics

Of those studying in May 2004, 65% were in the labour force. Of those who gained placement but deferred study, 84% were in the labour force.

PERSONS AGED 15–64, EDUCATIONAL ENROLMENT EXPERIENCE BY LABOUR FORCE STATUS 2004

	Full-time workers '000	Part-time workers '000	Total employed '000	Unemployed '000	In the labour force '000	Not in the labour force '000	Total '000
Applied to enrol in a course of study in 2004	723.1	868.9	1,592.0	165.8	1,757.8	885.1	2,642.8
Studying in May 2004(a)	624.1	811.6	1,435.7	139.8	1,575.4	851.0	2,426.5
Gained placement but deferred study(b)	67.2	36.5	103.8	17.0	120.7	22.6	143.3
TAFE	23.7	14.0	37.7	6.8	44.5	9.7	54.2
Higher education	21.7	11.7	33.4	*5.2	38.6	*4.8	43.4
Unable to gain placement on application(b)	31.8	20.7	52.6	9.0	61.6	11.4	73.0

TAFE	10.0	9.8	19.8	7.4	27.2	6.9	34.1
Higher education	16.6	8.7	25.3	**0.8	26.1	**1.4	27.5
Did not apply to enrol in a course of study in 2004	5,995.5	1,804.2	7,799.8	391.7	8,191.5	2,338.7	10,530.2
Total	6,718.6	2,673.1	9,391.7	557.5	9,949.2	3,223.8	13,173.0

* estimate has a relative standard error between 25% and 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use.

(a) Includes study leading to a qualification and study not leading to a qualification.

(b) Includes other institutions.

Source: ABS [Education and Work, Australia](#), May 2004 (cat. no. 6227.0).

STATISTICAL NOTES

The Labour Force Framework

The labour force is the most widely used measure of the economically active population. The term 'labour force' as defined in the international standards is associated with a particular approach to the measurement of employment and unemployment. Essentially this approach is the categorisation of persons according to their activities during a short reference period by using a specific set of priority rules.

The labour force framework classifies the in-scope population into three mutually exclusive categories, at a given moment in time: employed; unemployed; and not in the labour force. The employed and unemployed categories together make up the labour force which gives a measure of the number of persons contributing to, or willing to contribute to, the supply of labour at that time. The third category (not in the labour force) represents the currently inactive population.

For more information see ABS [Labour Statistics: Concepts Sources and Methods](#) (cat. no. 6102.0, 2001).

Employed

Persons aged 15-64 years who, during the reference week: worked for one hour or more for pay, profit, commission or payment in kind, in a job or business or on a farm (comprising employees, employers and own account workers); or worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or were employees who had a job but were not at work and were: away from work for less than four weeks up to the end of the reference week; or away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four week period to the end of the reference week; or away from work as a standard work or shift arrangement; or on strike or locked out; or on workers' compensation and expected to return to their job; or were employers or own account workers who had a job, business or farm, but were not at work.

Full-time workers

Employed persons who usually worked 35 hours or more a week (in all jobs) and those who, although usually working less than 35 hours a week, worked 35 hours or more during the reference week.

Not in the labour force

Persons who were not in the categories 'employed' or 'unemployed'.

Part-time workers

Employed persons who usually worked less than 35 hours a week (in all jobs) and either did so during the reference week, or were not at work in the reference week.

Unemployed

Persons aged 15-64 years who were not employed during the reference week, and had actively looked for full-time or part-time work at any time in the four weeks up to the end of the reference week, and were available for work in the reference week; or were waiting to start a new job within four weeks from the end of the reference week and could have started in the reference week if the job had been available then.

Scope and classification

For more information refer to [Explanatory Notes](#) from ABS Education and Work, Australia, May 2004, (cat. no. 6227.0) and the labour Force Survey.

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CHARACTERISTIC: LIFELONG LEARNING AND ACCESS TO EDUCATION AND TRAINING

INDICATOR: Visits to public library facilities per capita

Library visits per head from 1996–97 to 1999–2000 increased by 8%.

PUBLIC LIBRARY VISITS PER HEAD OF POPULATION

year	1996–1997	1999–2000
	4.8	5.2

Source: ABS [Public Libraries](#), Australia, 1999–2000 (cat. no. 8561.0), ABS [Libraries and Museums](#), Australia, 1996–1997 (cat. no. 8649.0), ABS [Population by Age and Sex](#), Australian States and Territories (cat. no. 3201.0), June 1997–June 2000.

Attendance by age group can provide a partial indication of informal lifelong learning. The highest attendance in 1999–2000 was registered by the 15–17 year age group at 61% followed by the 35–44 year age group at 44%.

ATTENDANCE(a) AT LIBRARIES(b), 1999

Attendance rate(c)		%
Sex		
	Males	30.4
	Females	45.6
	Persons	38.1
Age group (years)		
	15–17	60.5
	18–24	38.1
	25–34	36.6
	35–44	43.7
	45–54	35.1
	55–64	30.6
	65 and over	33.5
Birthplace		
	Australia	38.3
	Main English-speaking countries	47.2
	Other countries	31.1

(a) Attendance at least once in the 12 months prior to interview in April 1999.

(b) National, state or local government library only.

(c) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: ABS [Attendance at Selected Cultural Venues, Australia](#), April 1999 (cat. no. 4114.0).

STATISTICAL NOTES

In the 1996–97 publication ABS [Libraries and Museums](#), 1996–1997 (cat. no. 8649.0) public Libraries comprised National and State Libraries, Local Government authority libraries, and Regional Libraries and data were aggregated. In the 1999–2000 publication, ABS [Public Libraries](#), 1999–2000 (cat. no. 8561.0) the data were not aggregated. (Regional libraries, which referred to those libraries operated jointly by more than one LGA, were not identified separately in the 1999–2000 survey.) Data for 1999–2000 were aggregated for the purposes of this indicator.

Library visits per head of population

This refers to the total number of visits to library locations during the survey period divided by the estimated resident population as at 30 June.

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INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) INDICATORS

A summary of the Information and Communications Technology indicators is presented below.

A more detailed view of each indicator (including more detailed data, definitions etc.) can be found by clicking on the indicator description shown below. Please note that the description of many of the indicators in this view has been shortened to fit. In such cases, the more detailed view for those indicators contains their full description.

Abbreviations used on this page may be found in the Framework release, see [Abbreviations](#) (cat. no. 1375.0). They are also explained in the detailed view of each indicator.

CHARACTERISTIC: ICT INFRASTRUCTURE AND ACCESS

	no.	period	no.	period
Internet services: number of Internet service providers (ISPs), and access lines				

ISPs	667	Sep 2003	694	March 2004
Access lines	1,307,487	Sep 2003	1,474,345	March 2004
Internet workstations available in public libraries	827	1997	3,005	2000

CHARACTERISTIC: HOUSEHOLD AND INDIVIDUAL USE OF ICT

	%	period	%	period
Proportion of households with access to a computer	61	2002	66	2003
Proportion of households with access to a mobile phone	44	1998	72	2002
Proportion of households with access to the Internet	46	2002	53	2003
Proportion of individuals (adults) accessing the Internet	41	1999	58	2002
Proportion of individuals (adults) using the Internet for particular activities				
Work or business related purposes	36	2001	41	2002
Educational or study purposes	32	2001	36	2002
Accessing government services (from any location)	16	2001	21	2002
Purchasing or ordering goods or services (from any location)	5	1999	15	2002
Proportion of individuals (aged 15 years or over) with a disability, using the Internet for particular activities and purposes, including accessing government services				
Personal or private purposes			94	2003
Work or business related purposes			37	2003
Education or study purposes			37	2003
Volunteer or community purposes			11	2003
	'000	period	'000	period
Number of household ISP subscribers	4,516	Sep 2003	4,480	March 2004
	'000 GB	period	'000 GB	period
Volume of data downloaded by household ISP subscribers	3,317	Sep 2003	4,978	March 2004

CHARACTERISTIC: BUSINESS AND GOVERNMENT USE OF ICT

	%	period	%	period
Proportion of businesses with computers, web sites and Internet access				
Computers	84	Jun 2002	83	Jun 2003
Internet access	72	Jun 2002	71	Jun 2003
Web sites	24	Jun 2002	23	Jun 2003
Proportion of farms using computers and the Internet for business purposes				
Computer use	53	Jun 2002	54	Jun 2003
Internet use	43	Jun 2002	46	Jun 2003
Proportion of businesses with Internet access, by broad industry group (highest and lowest)				
Property and business services	87	Jun 2002	89	Jun 2003
Personal and other services	53	Jun 2002	58	Jun 2003
	no.	period	no.	period
Number of non-household ISP subscribers	696,000	Sep 2003	740,000	March 2004
	'000 GB	period	'000 GB	period
Volume of data downloaded by non-household subscribers	1,347	Sep 2003	1,431	March 2004

CHARACTERISTIC: PREVALENCE OF ELECTRONIC COMMERCE

	%	period	%	period
Proportion of businesses placing or receiving orders via the Internet or web				
Purchasing	25	2001-02	28	2002-03
Selling	6	2001-02	13	2002-03
Proportion of business income attributable to receiving orders via the Internet or web				
Earn less than 1% of income via Internet	33	2001-02	33	2002-03
Earn 1%-5% of income via Internet	31	2001-02	24	2002-03
Earn 5% or more of income via Internet	37	2001-02	42	2002-03
Business perceptions of the benefits for the business of receiving				

[orders via the Internet or web](#)

Increased number of customers			28	Jun 2003
Faster business processes			53	Jun 2003

[Business perceptions of the benefits for the business of placing orders via the Internet or web](#)

Time saving	84	Jun 2002	86	Jun 2003
Ability to track orders	19	Jun 2002	20	Jun 2003

CHARACTERISTIC: ICT SKILL BASE

			%	period
Lack of skills as a constraint to household use of the Internet				
Households	7	2000	10	2002

CHARACTERISTIC: STRENGTH OF THE ICT INDUSTRY

			\$m	period
ICT industry total income				
total income			89,979.2	2002-03
Production of ICT goods and services income from domestic production			48,778.5	2002-03

			\$m	period
Trade in ICT goods and services				
Imports			15,135.9	2002-03
Exports			4,646.3	2002-03

	\$m	period		
Research and experimental development (R&D) performed by the ICT industry	1695	2001-02	1497	2002-03

			no.	period
ICT industry employment			264,423	Jun 2003

This section contains the following subsection :

[Internet services: number of Internet service providers \(ISPs\), and access lines](#)

[Internet workstations available in public libraries and proportion of individuals \(adults aged 18 years or over\) accessing the Internet via public libraries](#)

[Proportion of households with access to a computer, by type of household, State or territory and broad region](#)

[Proportion of households with access to a mobile phone by type of household, income and broad region](#)

[Proportion of households with access to the Internet by type of household, state or territory and broad region](#)

[Proportion of individuals \(adults aged 18 years or over\) accessing the Internet by age, sex, occupation, level of education and broad region](#)

[Proportion of individuals \(adults aged 18 years or over\) using the Internet for particular activities and purposes, including accessing government services](#)

[Number of household ISP subscribers](#)

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[Proportion of businesses with computers, web sites and Internet access by business size](#)

[Use of computers and the Internet on farms](#)

[Number of non-household \(includes business and government\) ISP subscribers](#)

[Volume of data downloaded by non-household \(includes business and government\) ISP subscribers](#)

[Proportion of businesses placing or receiving orders via the Internet or web, by broad industry group](#)

[Proportion of business income attributable to receiving orders via the Internet or web, by business size](#)

[Business perceptions of the benefits of receiving orders via the Internet or web](#)

[Business perceptions of the benefits for the business of placing orders via the Internet or web](#)

[Lack of skills as a constraint to household use of computers and the Internet](#)

[Information and Communications Technology \(ICT\) industry income by broad industry group](#)

[Proportion of businesses with Internet access, by broad industry group](#)

[Proportion of individuals \(aged 15 years or over\) with a disability, using the Internet for particular activities and purposes, including accessing government services](#)

[Information and Communications Technology \(ICT\) industry employment](#)

[Production of Information and Communications Technology \(ICT\) goods and services, by broad commodity group](#)

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CHARACTERISTIC: ICT INFRASTRUCTURE AND ACCESS

INDICATOR: Internet services: number of Internet service providers (ISPs) and access lines

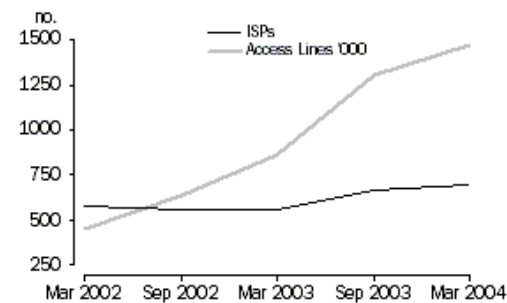
There were 694 ISPs in Australia supplying Internet access services to 5.2 million active subscribers at the end of March 2004. In order to provide this access, ISPs utilised 1,474,345 access lines. The number of access lines available to subscribers increased by 13% to 1,474,345 between the September quarter 2003 and March quarter 2004. Significantly influencing this growth has been the increasing number of subscribers with non dial-up connections.

NUMBER OF ISPs AND ACCESS LINES

	2002		2003		2004
	March quarter no.	September quarter no.	March quarter no.	September quarter no.	March quarter no.
ISPs	571	563	554	667	694

Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).

NUMBER OF ISPs AND ACCESS LINES



Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).

STATISTICAL NOTES

The ABS [Internet Activity Survey](#) is a census which collects information on aspects of Internet access services and other services provided by ISPs in Australia. Please see the [Explanatory Notes](#) of cat. no. 8153.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Internet Service Provider (ISP)

Resident Australian individual or business offering Internet access services to customers.

Access lines

Lines, points, modem access points available to subscribers to access their ISP.

Active subscribers

Subscribers who have accessed the Internet or paid for access to the Internet through an ISP in the ninety days during the reference period.

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CHARACTERISTIC: ICT INFRASTRUCTURE AND ACCESS

INDICATOR: Internet workstations available in public libraries and proportion of individuals (adults aged 18 years or over) accessing the Internet via public libraries

The number of workstations available in public libraries increased nearly fourfold from June 1997 to June 2000. Notwithstanding this increase, between 1998 and 2000, the proportion of adults accessing the Internet from public libraries remained low compared to access from all sites.

INTERNET WORKSTATIONS AVAILABLE(a) IN PUBLIC LIBRARIES

	June 1997	June 2000
Number of Internet workstations	827	3,005
Number of Internet workstations per location	0.5	2.0

(a) Internet workstations available for public use.

ADULT ACCESS TO THE INTERNET BY SITE(a)

Site of access	1998 %	1999 %	2000 %
Public libraries	3	6	5
All sites	32	41	47

(a) Proportion of adults aged 18 years or over.

Source: ABS [Household Use of Information Technology, Australia](#), 2000 (cat. no. 8146.0).

STATISTICAL NOTES

Data on Internet workstations are from ABS [surveys of libraries](#) conducted in respect of 1996–97 and 1999–2000.

Data on Internet access via public libraries are from the ABS [Household Use of Information Technology Survey](#) which was conducted as part of the ABS Population Survey Monitor until 2000. Information presented here is based on an average over the four quarterly surveys conducted in each year.

Later data on this topic will be available from the same publication (cat. no. 8146.0) but are collected via different survey vehicles (the 2001 Survey of Education, Training and Information Technology and the 2002 General Social Survey).

Indicator originally proposed in Framework

This indicator combines two indicators proposed in the ABS Discussion Paper [Measuring a knowledge-based economy and society, An Australian Framework](#) (cat. no. 1375.0). They are: **Access to the Internet via public libraries, proportion of individuals accessing the Internet** and **Public libraries offering technology facilities**. The latter has been slightly amended to refer to Internet workstations in public libraries.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

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CHARACTERISTIC: HOUSEHOLD AND INDIVIDUAL USE OF ICT

INDICATOR: Proportion of households with access to a computer, by type of household, income and broad region

The proportion of Australian households with access to a computer at home increased from 44% in 1998 to 66% in 2003. Households with children, or those located in capital city areas were more likely to have computer access than those without children or located in the balance of the state.

HOUSEHOLDS WITH ACCESS TO A HOME COMPUTER(a)

	1998	1999	2000	2001	2002	2003
	%	%	%	%	%	%
Households						
Without children aged under 15	36	39	44	51	53	58
With children aged under 15	63	65	71	77	79	85

State or territory

New South Wales	44	45	52	59	61	65
Victoria	46	50	56	61	62	68
Queensland	43	44	50	55	57	65
South Australia	41	45	49	56	58	62
Western Australia	44	50	55	58	63	67
Tasmania	36	40	45	50	51	57
Northern Territory(b)	42	55	54	52	62	np
Australian Capital Territory	64	66	70	77	78	80
Region						
Capital city	48	51	55	62	65	69
Balance of state	38	40	48	52	54	61
Total	44	47	53	58	61	66

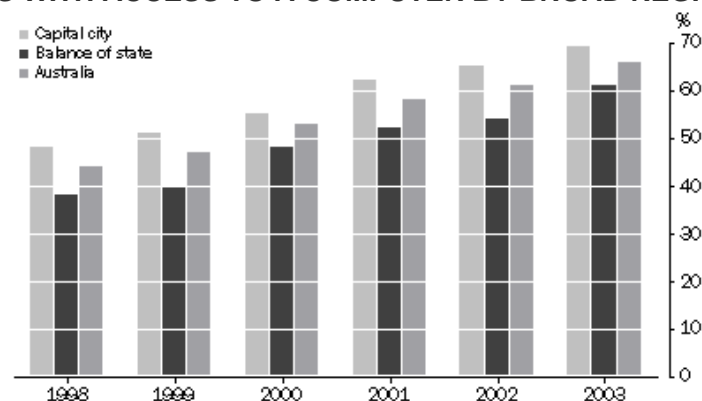
(a) Proportions are of all households in each category.

(b) Northern Territory estimates for 2003 are included in the total and other classifications but cannot be shown separately.

np not available for publication but included in totals where applicable, unless otherwise indicated.

Source: ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0).

HOUSEHOLDS WITH ACCESS TO A COMPUTER BY BROAD REGION, 1998–2003



Source: ABS Household Use of Information Technology, Australia (cat. no. 8146.0).

STATISTICAL NOTES

Household data are from the ABS [Household Use of Information Technology Survey](#). Up to 2000 data was collected as part of the ABS Population Survey Monitor (PSM) in 2001 as part of the Survey of Education, Training and Information Technology (SETIT) in 2002 as part of the General Social Survey (GSS) and in 2003 as part of the Survey of Disability, Ageing and Carers (SDAC).

Computer

Includes desktop computers, laptops, notebooks, items such as pocket computers or 'personal organisers' which can be plugged into larger computers and dedicated word processors. From 2000, machines were excluded from the survey as were machines where repair or restoration to working order was not being planned.

Household

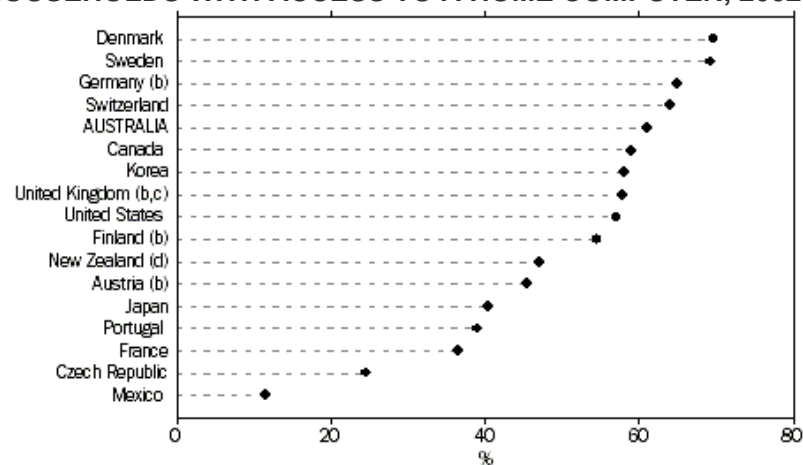
A household is defined as a group of one or more persons in a private dwelling who consider themselves to be separate from other persons in the dwelling, and who make regular provisions to take meals separately from those other persons. Lodgers who receive accommodation and meals are not treated as separate households. A household may consist of any number of family and non-family members.

Capital city

Capital city refers to capital city statistical divisions. These delimit an area which is stable for general statistical purposes. The boundary is defined to contain anticipated development of the city for a period of 20 years. They contain more than just the urban centre, and represent the city in the wider sense.

INTERNATIONAL COMPARISON

HOUSEHOLDS WITH ACCESS TO A HOME COMPUTER, 2002(a)



(a) Or latest year available
(b) Data relates to first quarter 2002
(c) March 2001 - April 2002
(d) July 2000 - June 2001

Source: [OECD Science, Technology and Industry Scoreboard 2003](http://www.oecd.org), Towards a knowledge-based economy, (<http://www.oecd.org>).

STATISTICAL NOTES

Information on household home computer access was provided to the OECD by National Statistical Organisations which collected the information using a variety of surveys, such as labour force, time use, household expenditure, general or specialised social surveys. Issues for international comparability include differences in the timing, scope and coverage of national surveys.

Users should note that statistics on ICT use may differ because of structural differences in the composition of households between countries.

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CHARACTERISTIC: HOUSEHOLD AND INDIVIDUAL USE OF ICT

INDICATOR: Proportion of households with access to a mobile phone by type of household, income and broad region

The prevalence of use of mobile phones was evident in 1998 when 44% of Australian households had access to some type of mobile phone. That use has continued to grow, with 72% of households having access to a mobile phone in 2002.

HOUSEHOLDS WITH ACCESS TO A MOBILE PHONE(a)

	1998 %	2000 %	2002 %
Households			
Without children aged under 15	40	55	66
With children aged under 15	54	75	86
Household income			
\$0–\$24,999	17	30	44
\$25,000–\$49,999	44	62	74
\$50,000–\$74,999	61	76	88

\$75,000–\$99,999	69	83	92
\$100,000 or more	83	90	95
Not stated/don't know	54	68	76
Region			
Metropolitan areas	49	66	76
Ex–metropolitan areas	37	54	66
Total	r44	61	72

(a) Proportions are of all households in each category.

r revised

Source: ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0).

STATISTICAL NOTES

Household data are from the ABS [Household Use of Information Technology Survey](#). Up to 2000 data was collected as part of the ABS Population Survey Monitor (PSM) in 2001 as part of the Survey of Education, Training and Information Technology (SETIT) and in 2002 as part of the General Social Survey (GSS).

Mobile phone

A personal telephone which operates by battery from any location within range of receiving from a relay station, sometimes called a cellular mobile phone. They should not be confused with a car phone or cordless phone. A digital mobile phone (GSM) specifies that the phone relies on a digital operating system. An analogue mobile phone refers to a mobile phone connected to an analogue network (although the analogue network has been phased out, services were still available in areas outside major cities until the end of 2000). A CDMA mobile phone (Code Division Multiple Access) operates on the CDMA digital network.

Household

A household is defined as a group of one or more persons in a private dwelling who consider themselves to be separate from other persons in the dwelling, and who make regular provisions to take meals separately from those other persons. Lodgers who receive accommodation and meals are not treated as separate households. A household may consist of any number of family and non-family members.

Metropolitan

Metropolitan refers to capital city statistical divisions. These delimit an area which is stable for general statistical purposes. The boundary is defined to contain anticipated development of the city for a period of 20 years. They contain more than just the urban centre, and represent the city in the wider sense.

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CHARACTERISTIC: HOUSEHOLD AND INDIVIDUAL USE OF ICT

INDICATOR: Proportion of households with access to the Internet by type of household, state and broad region

The percentage of Australian households with access to the Internet at home has increased strongly, rising from 16% in 1998 to 53% in 2003. Households with children under 15 years of age or located in capital city areas were more likely to have Internet access than those without children under 15 years of age or located in the balance of state areas.

HOUSEHOLDS WITH ACCESS TO THE INTERNET(a)

	1998	1999	2000	2001	2002	2003
	%	%	%	%	%	%
Households						
Without children aged under 15	14	18	28	37	40	47
With children aged under 15	20	29	43	54	59	68

State or territory

New South Wales	18	22	32	45	48	54
Victoria	15	23	34	43	46	54
Queensland	15	20	31	40	42	52
South Australia	12	19	29	37	43	48
Western Australia	15	22	34	41	48	53
Tasmania	10	18	25	31	35	41
Northern Territory(b)	16	30	35	38	48	np
Australian Capital Territory	27	34	46	60	60	66
Region						
Metropolitan areas	19	25	36	47	50	56
Ex-metropolitan areas	10	15	26	34	39	47
Total	16	22	32	42	46	53

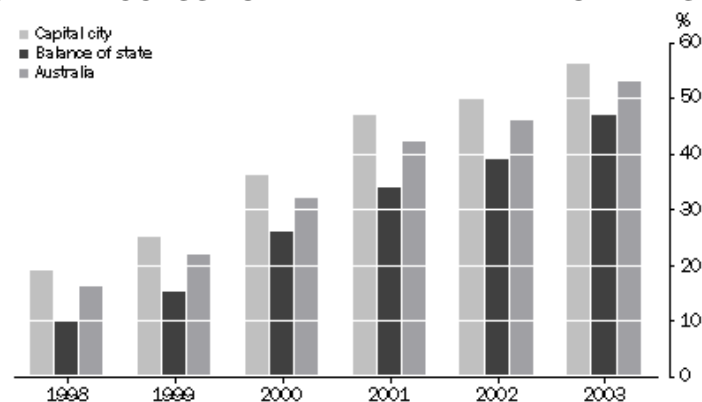
(a) Proportions are of all households in each category.

(b) Northern Territory estimates for 2003 are included in the total and other classifications but cannot be shown separately.

np not available for publication but included in totals where applicable, unless otherwise indicated.

Source: ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0).

HOUSEHOLDS WITH ACCESS TO THE INTERNET BY BROAD REGION, 1998–2003



Source: ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0).

STATISTICAL NOTES

Household data are from the ABS [Household Use of Information Technology Survey](#). Up to 2000 data was collected as part of the ABS Population Survey Monitor (PSM) in 2001 as part of the Survey of Education, Training and Information Technology (SETIT) in

2002 as part of the General Social Survey (GSS) and in 2003 as part of the Survey of Disability, Ageing and Carers (SDAC).

It should be noted that counts of people or households with Internet access are not the same as counts of household ISP subscribers (because subscribers may have accounts with more than one ISP and conversely an ISP subscriber account may provide Internet access and email addresses for several people/households). Growth patterns may therefore differ from those shown in the related indicator [Number of household ISP subscribers](#).

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

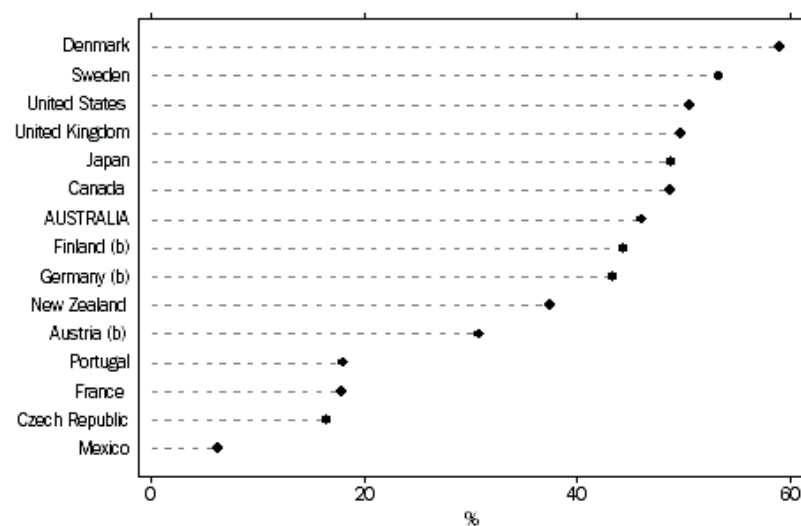
Household

A household is defined as a group of one or more persons in a private dwelling who consider themselves to be separate from other persons in the dwelling, and who make regular provisions to take meals separately from those other persons. Lodgers who receive accommodation and meals are not treated as separate households. A household may consist of any number of family and non-family members.

Capital city

Capital city refers to capital city statistical divisions. These delimit an area which is stable for general statistical purposes. The boundary is defined to contain anticipated development of the city for a period of 20 years. They contain more than just the urban centre, and represent the city in the wider sense.

INTERNATIONAL COMPARISONS**HOUSEHOLDS WITH ACCESS TO THE INTERNET 2002 (a)**



(a) Or latest year available
 (b) Data relates to first quarter of 2002

Source: [OECD Science, Technology and Industry Scoreboard 2003](http://www.oecd.org), Towards a knowledge-based economy, (<http://www.oecd.org>).

STATISTICAL NOTES

Information on household Internet access was provided to the OECD by National Statistical Organisations which collected the information using a variety of surveys, such as labour force, time use, household expenditure, general or specialised social surveys. Issues for international comparability include differences in the timing, scope and coverage of national surveys.

Users should note that statistics on ICT use may differ because of structural differences in the composition of households between countries.

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CHARACTERISTIC: HOUSEHOLD AND INDIVIDUAL USE OF ICT

INDICATOR: Proportion of individuals (adults aged 18 years or over) accessing the Internet by age, sex, occupation, level of education and broad region

The number of adults using the Internet continues to grow strongly though the rate of change is slowing. Internet use rose from 31% of adults in 1998 to 58% in 20002. In all years, those most likely to access the Internet were: younger adults, males, those with a Bachelor degree or above or those in a metropolitan area.

ADULTS ACCESSING THE INTERNET(a)

	1998	1999	2000	2001	2002
	%	%	%	%	%
Age group (years)					
18–24	58	72	75	80	84
25–34	46	56	62	71	78
35–44	36	46	52	64	69

45–54	27	36	47	55	58
55–64	13	22	26	35	42
65 and over	2	6	9	na	13
Sex					
Male	35	45	50	57	61
Female	28	37	43	51	56
Occupation					
Manager and professional	57	69	76	82	85
Clerk, sales and personal services	40	55	66	71	76
Trades person, plant or machinery operator, labourer	23	38	45	49	51
Level of education (b)					
Secondary school	21	28	34		
Trade or other certificate	25	37	45		
Assoc. or undergrad diploma	42	59	69		
Bachelors degree	72	80	81		
Year 12 or below				44	48
Certificate				50	56
Advanced diploma or diploma				76	77
Bachelors degree or above				86	88
Region					
Metropolitan	35	45	50	58	62
Other areas Ex–metropolitan	25	33	40	47	51
Total	r31	41	r46	54	58

(a) Proportions are of all adults in each category.

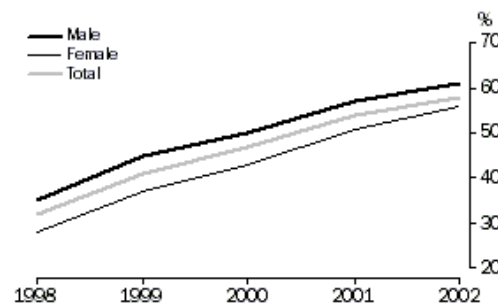
(b) Categories for 'level of education' from 2001 are not comparable to previous years' publications. See Statistical Notes for more information.

na not available.

r revised.

Source: ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0).

ADULTS ACCESSING THE INTERNET



Source: ABS [Household Use of Information Technology](#), Australia, (cat. no. 8146.0).

STATISTICAL NOTES

Household data are from the ABS [Household Use of Information Technology Survey](#). Up to 2000 data was collected as part of the ABS Population Survey Monitor (PSM) in 2001 as part of the Survey of Education, Training and Information Technology (SETIT) and in 2002 as part of the General Social Survey (GSS).

It should be noted that counts of people or households with Internet access are not the same as counts of household ISP subscribers (because subscribers may have accounts with more than one ISP and conversely an ISP subscriber account may provide Internet access and email addresses for several people/households). Growth patterns may therefore differ from those shown in the related indicator **Number of household ISP subscribers**.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Metropolitan

Metropolitan refers to capital city statistical divisions. These delimit an area which is stable for general statistical purposes. The boundary is defined to contain anticipated development of the city for a period of 20 years. They contain more than just the urban centre, and represent the city in the wider sense.

Level of Education

In 2001, the ABS Classification of Qualifications (ABSQ) (cat. no. 1261.0) was replaced by the [Australian Standard Classification of Education \(ASCED\)](#) (cat. no. 1272.0). The ASCED is a new standard classification which can be applied to all sectors of the Australian Education system including schools, vocational education and training, and higher education. 'Level of highest educational attainment' is not comparable to the categories presented for the classification 'Qualifications' used in previous years' publications. Qualification was presented for four categories; secondary school, Trade or other certificate, Assoc. or undergrad. diploma, and Bachelors degree. These are not strictly comparable to those categories presented in the above table for 'level of education' of; Year 12 or below, Certificate, Advanced diploma or diploma or Bachelors degree or above.

INTERNATIONAL COMPARISONS

FREQUENCY OF USE OF THE INTERNET FROM ANY LOCATION, 2001, Or closest available year

	Individuals using the Internet daily	Individuals using the Internet at least once a week	Individuals using the Internet
	%	%	%
Australia(a)	16.0	35.0	47.0
Austria(a)	12.0	27.0	29.0
Canada(a)	16.6	21.6	60.8
Denmark(b)	25.0	56.3	62.0
Finland(b)	34.3	54.2	63.7
Italy(a)	5.7	8.2	18.5
Mexico	na	2.2	8.8
Netherlands	28.0	51.0	57.0
Sweden(a)	na	59.6	67.8
Turkey(a)(c)	na	6.4	9.1
United Kingdom(b)	13.2	38.5	55.0

na not available

(a) 2000 data.

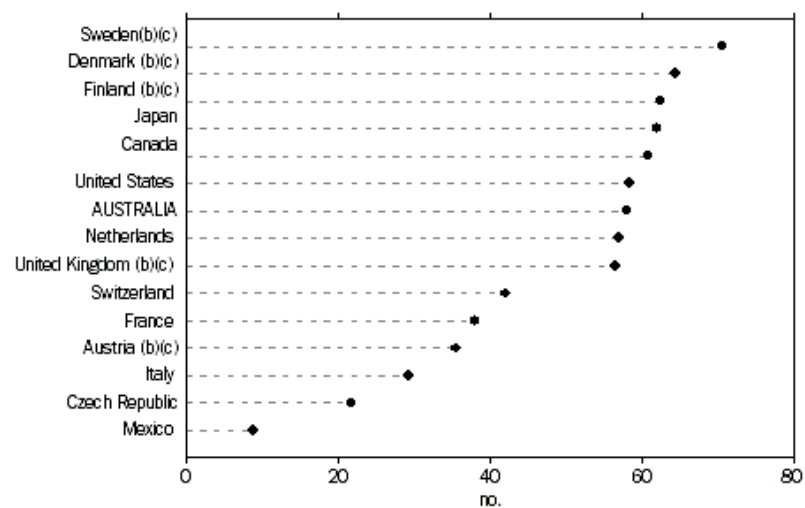
(b) Beginning of 2002.

(c) Individuals belonging to households in urban areas.

Note: There are significant differences in the age range used by countries in the above table. Proportion of all individuals of age 16 years and older except for Canada and Finland (15+), Italy (11+), Austria (6+), Mexico and the Netherlands (12+) and Australia and Turkey (18+).

Source: OECD, ICT database, August 2002 [Measuring the Information Economy 2002](#).

INDIVIDUALS USING THE INTERNET FROM ANY LOCATION, 2002(a)



(a) Or latest year available.
 (b) First quarter of 2002
 (c) For 2002, individuals aged 16-74 years, except for Switzerland (14+).

Source: [OECD Science, Technology and Industry Scoreboard 2003](http://www.oecd.org), Towards a knowledge-based economy, (<http://www.oecd.org>).

STATISTICAL NOTES

Information on individual Internet use was provided to the OECD by National Statistical Organisations which collected the information using a variety of surveys, such as labour force, time use, household expenditure, general or specialised social surveys. Issues for international comparability include differences in the timing, scope and coverage of national surveys.

Users should note the differences in scope due to differing age cut-offs, especially given that age is an important determinant of Internet use.

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CHARACTERISTIC: HOUSEHOLD AND INDIVIDUAL USE OF ICT

INDICATOR: Proportion of individuals (adults aged 18 years or over) using the Internet for particular activities and purposes, including accessing government services

The most commonly reported purpose of Internet use at home, in 2002, was for personal or private use (89%).

PURPOSE OF INTERNET USE AT HOME(a)

	Personal or private purposes	Work or business related purposes	Educational or study purposes	Other purposes
Year	%	%	%	%
2001(b)	87	36	32	7
2002	89	41	36	11

(a) More than one purpose may be nominated.

(b) Persons aged 65 years or over were not in scope in 2001. Totals include imputed data.

Source: ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0).

The most popular uses of the Internet at home in 2000 were email or chat sites (68%), general browsing (57%) and finding information relating to work (36%).

ADULT HOME INTERNET ACTIVITIES, 2000(a)

	Using email or chat sites	General browsing	Finding work related information	Finding study related information	Finding information on goods or services	Finding technical information, patches or software	Playing games
	%	%	%	%	%	%	%
Total	68	57	36	26	26	16	8

(a) Proportions are of all adults accessing the Internet at home over the previous 12 months.

Source: ABS [Household Use of Information Technology](#), Australia, 2000 (cat. no. 8146.0).

More than one in five (21%) adult Australians accessed government services via the Internet for private purposes in 2002 compared with less than one in ten (9%) in 2000. The Internet was used to pay bills by 49% of those adults who accessed government services in 2002.

ADULTS ACCESSING GOVERNMENT SERVICES VIA THE INTERNET FOR PRIVATE PURPOSES(a)

Year	Proportion of adults who accessed government services(b) %	Pay bills(c) %	Taxation information or services(c) %	Employment information or services(c) %	Submit taxation returns(c) %	Pension or benefit information or services(c) %
2000	9	33	32	28	15	7
2001	16	38	25	24	14	6
2002	21	49	20	20	20	6

- (a) From home or other locations over the previous 12 months.
 (b) Proportion is of all adults.
 (c) Proportions are of adults accessing government services via the Internet.
 r revised.

Source: ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0).

An estimated 15% of adults were Internet shoppers (from home or other locations) in 2002. Of those, 46% made orders or purchases valued at \$500 or less.

ADULTS PURCHASING OR ORDERING GOODS OR SERVICES VIA THE INTERNET FOR PRIVATE PURPOSES(a)

Year	Proportion of all adults who were Internet shoppers(b) %	Total purchases and orders valued at \$1–\$500(c) %	Total purchases and orders valued at over \$500(c) %
1999	5	70	29
2000	7	68	29
2001	11	61	39
2002	15	46	54

- (a) From home or other locations over the previous 12 months.
 (b) Proportion is of all adults.
 (c) Proportions are of adult Internet shoppers. Percentages may not add to 100 due to a number of responses where the value of purchases and orders were unknown.

Source: ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0).

STATISTICAL NOTES

Household data are from the ABS [Household Use of Information Technology Survey](#). Up to 2000 data was collected as part of the ABS Population Survey Monitor (PSM) in 2001 as part of the Survey of Education, Training and Information Technology (SETIT) and in 2002 as part of the General Social Survey (GSS).

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Chat

Real-time communication between two users via computer. Once a chat has been initiated, either user can enter text by typing on the keyboard and the entered text will appear on the other user's monitor. Most networks and online services offer a chat feature. Source: <http://www.webopedia.com/>.

Internet shopping

Purchasing or ordering goods or services via the Internet for private use.

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At the end of the March quarter 2004, there were an estimated 4.5 million active household ISP subscribers in Australia. The number of household subscribers has grown since the inception of the survey in September 2000, increasing 32% over the three years to September 2003, however, the March 2004 figure showed a slight fall (down 0.8%) for the first time. At the end of the March quarter 2004, an estimated 14% of household subscribers were on broadband access speed connection plans with the remainder (86%) on sub-256kbps access plans.

	2001	2002	2003	2004
	September quarter '000	March quarter '000	September quarter '000	March quarter '000
Total Subscribers	3,726	3,724	3,904	4,480

Access Speed							
Less than 256kbps	n.a.	n.a.	n.a.	n.a.	4,027	3,871	
256kbps or greater	n.a.	n.a.	n.a.	n.a.	488	609	

(a) Number at the end of the reference quarter.

(b) Download speed of access connection was collected commencing September 2003.

Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).

NUMBER OF HOUSEHOLD ISP SUBSCRIBERS



Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).

STATISTICAL NOTES

The ABS [Internet Activity Survey](#) is a census which collects information on aspects of Internet access services and other services provided by ISPs in Australia. Please see the [Explanatory Notes](#) of cat. no. 8153.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

It should be noted that counts of subscribers are not the same as counts of people or households with Internet access (because subscribers may have accounts with more than one ISP and conversely an ISP subscriber account may provide Internet access and email addresses for several people/households). Growth patterns may therefore differ from those shown in the related indicators **Proportion of households with access to the Internet by type of household, income and broad region** and **Proportion of individuals (adults aged 18 years or over) accessing the Internet by age, sex, occupation, level of education and broad region**.

Active subscribers

Subscribers who have accessed the Internet or paid for access to the Internet through an ISP in the ninety days during the reference period.

Broadband

Defined by ABS as an 'always on', Internet connection with an access speed equal to or greater than 256kbps.

Business and government subscribers

All businesses, corporations, non-profit organisations and government organisations who obtain access to the Internet through an ISP.

Internet Service Provider (ISP)

Resident Australian individual or business offering Internet access services to customers.

Kilobits.

A kilobit (Kb) is a data unit of 1,024 bits and generally abbreviated as kb or kbit. Data speeds are generally referred to in kilobits (kbps).

Monthly/quarterly/annual access plan

A subscription option where customers pay a flat monthly/quarterly/annual fee, and receive either a set period of time on-line during the month/quarter/year, usually with additional fees for exceeding that time or set download limits, or a flat monthly/quarterly/annual fee for unlimited access time during the month/quarter/year with other limits usually applying e.g. maximum single session times.

Hourly access plan

A subscription option where customers pay for dial-up access on an hourly basis.

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CHARACTERISTIC: HOUSEHOLD AND INDIVIDUAL USE OF ICT

INDICATOR: Volume of data downloaded by household ISP subscribers

During the March quarter 2004, active household subscribers downloaded an estimated 4,978 million Megabytes (MB) of data. This was an average of 1,109MB per household subscriber for the three months ended 30 March 2004. The volume of data downloaded by household ISP subscribers has increased significantly from the September quarter 2000 (when it was 595 million MB) growing by over 457% in the three years to September quarter 2003 and by 50% in the six months from September 2003 to March 2004. Factors contributing to the increase include an increase in the number of household subscribers (up 32% since September 2000 but down by 0.8% between September 2003 and March 2004) and the continued uptake of faster broadband access services which allow more rapid downloads. The ABS estimates that growth in broadband subscribers (household, business and other organisations) is about 27% (or 177,000 subscribers) in the six months between September quarter 2003 and March quarter 2004.

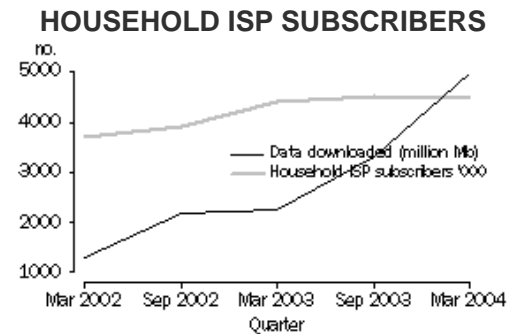
VOLUME OF DATA DOWNLOADED BY HOUSEHOLD ISP SUBSCRIBERS

2002		2003		2004
March	September	March	September	March

	quarter	quarter	quarter	quarter (a)	quarter
Dial-up (million MB)				1,341	1,457
Non Dial-up (million MB)				1,976	3,521
Total (million MB)	1,303	r2,172	2,264	3,317	4.978

(a) Dial-up/Non Dial-up split collected from September quarter 2003
r revised.

Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).



Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).

STATISTICAL NOTES

The ABS [Internet Activity Survey](#) is a census which collects information on aspects of Internet access services and other services provided by ISPs in Australia. Please see the [Explanatory Notes](#) of cat. no. 8153.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Internet Service Provider (ISP)

Resident Australian individual or business offering Internet access services to customers.

Active subscribers

Subscribers who have accessed the Internet or paid for access to the Internet through an ISP in the ninety days during the reference period.

Household subscribers

Households and private individuals who subscribe to Internet access via an ISP. This may include some home based businesses.

Megabyte (MB)

A data unit of 1,048, 576 bytes, sometimes interpreted as 1 million bytes.

Gigabyte (GB)

A data unit of 1,024 MB.

Broadband

Defined by the ABS as an 'always on' Internet connection with an access speed equal to or greater than 256kbs.

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and Society \(Media Release\)](#)[Contents](#) >> [Information and Communications Technology Indicators](#) >> Proportion of businesses with computers, web sites and Internet access by business size

CHARACTERISTIC: BUSINESS AND GOVERNMENT USE OF ICT

INDICATOR: Proportion of businesses with computers, web sites and Internet access, by business size

The number of Australian businesses using information technology (IT) continues to grow. Computer use has shown steady growth, rising from 49% of Australian businesses at the end of June 1994 to 83% by June 2003. In contrast, the proportion of businesses with a web presence has grown rapidly, rising from 6% in June 1998 to 23% in June 2003. The proportion of businesses with Internet access has also risen fairly quickly, from 29% in June 1998 to 71% in June 2003. Between June 2002 and June 2003, growth in use of IT generally was flatter. For instance, no growth occurred in the proportion of businesses using a computer, having access to the Internet or with a web presence.

AUSTRALIAN BUSINESSES USING IT(a)

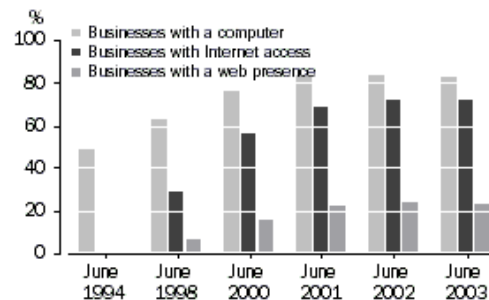
	June 1994	June 1998	June 2000	June 2001	June 2002	June 2003
	%	%	%	%	%	%
Businesses with a computer	49	63	76	84	84	83
Businesses with Internet access	na	29	56	69	72	71
Businesses with a web presence	na	6	16	22	24	23

na not available (data not collected for 1994)

(a) Proportions are of businesses in scope of the survey (that is mainly employing businesses in most industries). See Publication [Explanatory notes](#) for more information.

Source: ABS [Business Use of Information Technology, Australia](#), 2002–03 (cat. no. 8129.0).

AUSTRALIAN BUSINESSES USING IT



Source: ABS [Business Use of Information Technology, Australia](#), 2002–03 (cat. no. 8129.0).

A strong relationship exists between the size of a business and the likelihood that the business is using IT. As employment and income size increase, so do the proportion of Australian businesses making use of IT. By June 2003, all large businesses (those employing 100 or more persons) used computers (100%) and had access to the Internet (99%), while 80% had a web presence. In contrast, very small businesses (those employing fewer than 5 persons) had a lower level of IT adoption; 78% used computers, 65% had access to the Internet and only 15% had a web presence.

AUSTRALIAN BUSINESSES USING IT(a), By business size, June 2003

Business size	Businesses using computers	Businesses with Internet access	Businesses with a web presence
	%	%	%
No. of employees			
0–4(b)	78	65	15
5–19	92	81	33
20–99	96	91	51
100 or more	100	99	80
Total income			
Less than \$100,000	71	58	11

\$100,000–\$999,999	83	71	21
\$1m–\$4.9m	95	85	41
\$5m or more	99	95	61
Total	83	71	23

(a) Proportions are of all in-scope businesses in each category.

(b) While the scope of the survey was employing businesses, it is likely that a small number of non-employers were included.

Source: ABS [Business Use of Information Technology, Australia](#), 2002–03 (cat. no. 8129.0).

STATISTICAL NOTES

Data are from the ABS annual [Business Use of Information Technology Survey](#). Please see the [Explanatory Notes](#) of cat. no. 8129.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Computer

Includes personal computers (PCs), laptops, notebooks, mainframes and mini-computers.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Web presence

Includes a web site, home page or a presence on another entity's web site. A web site or home page is an electronic document that is accessed via a unique address on the World Wide Web. The document provides information in a textual, graphical or multimedia format.

INTERNATIONAL COMPARISONS

INTERNET PENETRATION BY SIZE, 2001(a)(b)

	Number of employees				
	5–9	10–49	50–249	250+	10+
	%	%	%	%	%
Australia	72.0	85.0	95.0	100.0	86.0
Austria	na	80.7	97.0	98.9	83.7
Finland	76.7	89.5	96.0	97.1	90.8

Greece	na	52.2	73.3	87.5	54.2
Italy	na	69.5	89.8	97.1	72.0
Japan(c)	na	na	85.3	93.6	91.5
Luxembourg	na	51.9	63.2	69.5	54.6
Norway	66.0	79.0	95.0	96.0	81.5
Portugal	na	71.0	88.3	94.3	71.8
Spain	60.9	63.5	88.6	97.3	67.0
Sweden	na	88.3	96.4	99.4	89.9
United Kingdom	na	59.4	78.9	90.3	63.4

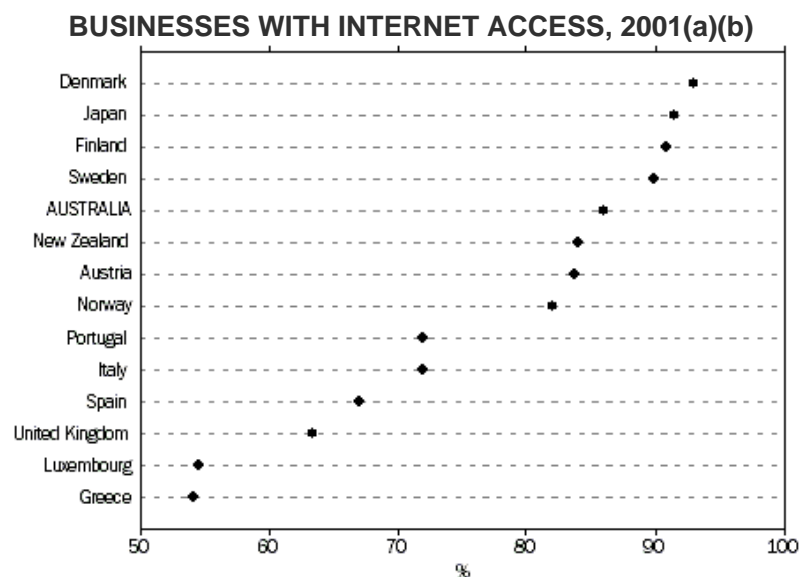
na not available

(a) At the start of 2001 (except for Australia, where it is as at 30 June 2001).

(b) Proportion of businesses using the Internet in each size class (by number of employees).

(c) Businesses with 50 or more employees, 50–99 employees instead of 50–249 and 100 or more employees instead of 250 or more.

Source: OECD, ICT database and Eurostat, E-Commerce Pilot Survey 2001, August 2002 [Measuring the Information Economy](#) 2002 (<http://www.oecd.org>).



(a) At the start of 2001 (except for Australia, where it is as at 30 June 2001).

(b) Percentage of businesses with ten or more employees except for Japan (50 or more employees).

Source: OECD, ICT database and Eurostat, E-Commerce Pilot Survey 2001, August 2002 [Measuring the Information Economy](#) 2002 (<http://www.oecd.org>).

BUSINESSES WITH OWN AND THIRD-PARTY WEB SITES, 2001(a)(b)

Proportion of businesses(b) with

	Internet access %	Own web site %	Third party web site %
Australia(c)	86.0	47.0	na
Austria	83.7	54.3	26.2
Denmark	93.0	71.0	na
Finland	90.8	59.7	na
Greece	54.2	28.8	8.3
Italy	72.0	8.9	25.8
Luxembourg	54.6	40.7	12.6
New Zealand	84.0	42.0	na
Norway	81.5	55.0	na
Portugal	71.8	30.3	2.4
Spain	67.0	6.9	28.8
Sweden	89.9	67.7	na
United Kingdom	63.4	49.9	11.4

na not available

(a) At the start of 2001 (except for Australia, where it is as at 30 June 2001).

(b) Percentage of businesses with ten or more employees.

(c) Data for own web site includes businesses with only a third party web site.

Source: OECD, ICT database and Eurostat, E-Commerce Pilot Survey 2001, August 2002 [Measuring the Information Economy](http://www.oecd.org) 2002 (<http://www.oecd.org>).

STATISTICAL NOTES

Information on business use of ICT is provided to the OECD by National Statistical Organisations. Issues for international comparability include differences in the timing and scope (in particular industry and size) of national surveys. The table presented above has had scope differences due to size removed.

Users should note that statistics on ICT use may differ because of differences in the composition of businesses between countries.

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CHARACTERISTIC: BUSINESS AND GOVERNMENT USE OF ICT

INDICATOR: Proportion of farms using computers and the Internet for business

In the year to 30 June 2003, an estimated 54% of the 132,983 farms in Australia with an estimated value of agricultural operations (EVAO) of \$5,000 or more, had used a computer as part of their business operations, while 46% had used the Internet as part of their business operations. The proportion of farms that have used the Internet has increased by 3 percentage points since the year ended 30 June 2002. For the same period, the proportion of farms that have used a computer has increased by 1 percentage point.

FARM USE OF COMPUTERS AND THE INTERNET (a)

	June 2002	June 2003
	%	%
Farms using a computer for business purposes	53	54
Farms using the Internet for business operations	43	46

(a) Proportions are of all farms with an estimated value of agricultural operations (EVAO) of \$5,000 or more.

Source: ABS [Use of Information Technology on Farms](#), Australia, June 2003 (cat. no. 8150.0).

There was a strong relationship between the proportion of farms using a computer and/or the Internet for business operations and farm size, with larger farms more likely to use one or both of these technologies.

FARM USE OF COMPUTERS AND THE INTERNET, By farm size, June 2003 (a)

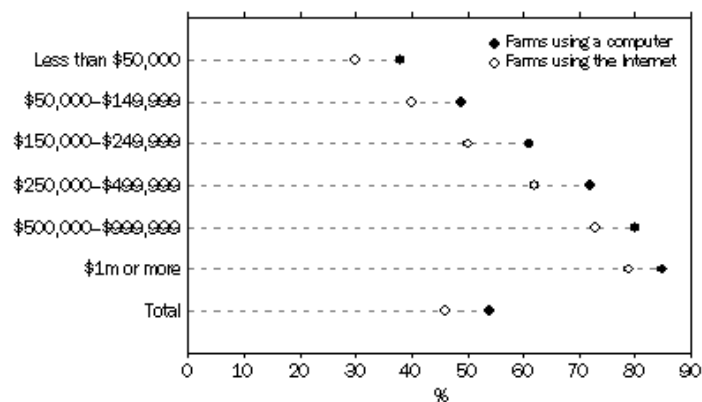
Farm size (EVAO)(b)	Farms using a computer for business operations	Farms using the Internet for business operations
	%	%
Less than \$50,000	38	30
\$50,000-\$149,999	49	40
\$150,000-\$249,999	61	50
\$250,000-\$499,999	72	62
\$500,000-\$999,999	80	73
\$1 million or more	85	79
Total	54	46

(a) Proportions are of all farms with an estimated value of agricultural operations (EVAO) of \$5,000 or more in each EVAO category.

(b) Estimated value of agricultural operations.

Source: ABS [Use of Information Technology on Farms](#), Australia, June 2003 (cat. no. 8150.0).

FARMS USING A COMPUTER OR THE INTERNET, BY FARM SIZE, JUNE 2003 (a)



Source: ABS Use of Information Technology on Farms, Australia, June 2003 (cat. no. 8150.0).

(a) Proportions are of all farms with an estimated value of agricultural operations (EVAO) of \$5,000 or more in each EVAO category.

STATISTICAL NOTES

Data are from the 2002-03 [ABS Agricultural Survey](#). The scope of the survey is establishments undertaking agricultural activity which

have an estimated value of agricultural operations (EVAO) of \$5,000 or more. For more information on the Agricultural Survey and the ICT component of the Survey, see the Explanatory notes of publication 8150.0 (these can be found at the end of the [Main features](#)).

Farm size

Farm size was determined by the estimated value of agricultural operations (EVAO).

Computer

In the Agricultural Survey, a computer includes personal computers (PCs), laptops, notebooks, personal organisers etc. which can be plugged into larger computers. The computer activities had to be directly related to the farm's business operations.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Internet access

In the Agricultural Survey, Internet access may be through a computer, set top box, games machine, mobile phone or other means. Internet use at locations other than the farm and Internet use not directly related to the farm's business operations, were excluded from the Agricultural Survey

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CHARACTERISTIC: BUSINESS AND GOVERNMENT USE OF ICT

INDICATOR: Number of non-household (includes business and government) ISP subscribers, by internet access speed

At the end of the March quarter 2004, there were an estimated 740,000 active non-household ISP subscribers in Australia. The number of non-household subscribers has grown overall since the inception of the survey in September 2000, increasing 61% over the three years to September 2003 and a further 6% between September quarter 2003 and March quarter 2004. An estimated 30% of non-household subscribers were on broadband access speed plans with the remainder (70%) maintaining a sub-256kbps connection.

NON-HOUSEHOLD ISP SUBSCRIBERS(a), by internet download speed (b)

	2001		2002		2003		2004
	September quarter '000	March quarter '000	September quarter '000	March quarter '000	September quarter '000	March quarter '000	
Total Subscribers	559	505	650	659	696	740	
Access speed							

Less than 256kbps	528	515
256kbps or greater	168	225

(a) Number at the end of the quarter.

(b) Download speed of access connection was collected commencing September 2003.

Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).

NUMBER OF NON-HOUSEHOLD ISP SUBSCRIBERS



Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).

STATISTICAL NOTES

The ABS [Internet Activity Survey](#) is a census which collects information on aspects of Internet access services and other services provided by ISPs in Australia. Please see the [Explanatory Notes](#) of cat. no. 8153.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

It should be noted that counts of subscribers are not the same as counts of organisations with Internet access (because subscribers may have accounts with more than one ISP and conversely an ISP subscriber account may provide Internet access and email addresses for several organisations).

Internet Service Provider (ISP)

Resident Australian individual or business offering Internet access services to customers.

Kilobits.

A kilobit (Kb) is a data unit of 1,024 bits and generally abbreviated as kb or kbit. Data speeds are generally referred to in kilobits (kbps).

Active subscribers

Subscribers who have accessed the Internet or paid for access to the Internet through an ISP in the ninety days during the reference period.

Broadband

Defined by ABS as an 'always on', Internet connection with an access speed equal to or greater than 256kbps.

Business and government subscribers

All businesses, corporations, non-profit organisations and government organisations who obtain access to the Internet through an ISP.

Monthly/quarterly/annual access plan

A subscription option where customers pay a flat monthly/quarterly/annual fee, and receive either a set period of time on-line during the month/quarter/year, usually with additional fees for exceeding that time or set download limits, or a flat monthly/quarterly/annual fee for unlimited access time during the month/quarter/year with other limits usually applying e.g. maximum single session times.

Hourly access plan

A subscription option where customers pay for dial-up access on an hourly basis.

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CHARACTERISTIC: NON-HOUSEHOLD USE OF ICT

INDICATOR: Volume of data downloaded by non-household (includes business and government) ISP subscribers

During the March quarter 2004, active non-household (includes business and government) subscribers downloaded an estimated 1,431 million Megabytes (MB) of data. This was an average of 1,963 MB per non-household subscriber. The volume of data downloaded by non-household ISP subscribers has increased significantly from the September quarter 2000 (when it was 457 million MB). Factors contributing to the increase include an increase in the number of non-household subscribers (up 42% since September 2000) and the continuing uptake of faster broadband access services which allow more rapid downloads.

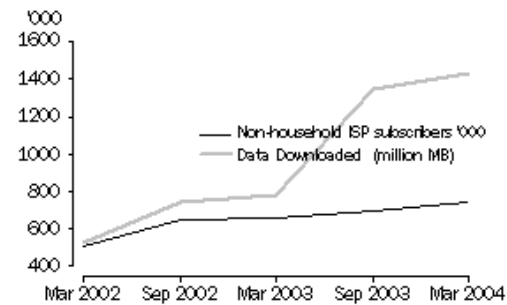
VOLUME OF DATA DOWNLOADED BY NON-HOUSEHOLD ISP SUBSCRIBERS

	2002		2003		2004
	March quarter	September quarter	March quarter	September quarter (a)	March quarter
Dial-up (million MB)				178	137
Non Dial-up (million MB)				1,169	1,294

(a) Dial-up/Non Dial-up split collected from September quarter 2003

Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0)

NON-HOUSEHOLD ISP SUBSCRIBERS



Source: ABS [Internet Activity, Australia](#), March 2004 (cat. no. 8153.0).

STATISTICAL NOTES

The ABS [Internet Activity Survey](#) is a census which collects information on aspects of Internet access services and other services provided by ISPs in Australia. Please see the [Explanatory Notes](#) of cat. no. 8153.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Internet Service Provider (ISP)

Resident Australian individual or business offering Internet access services to customers.

Active subscribers

Subscribers who have accessed the Internet or paid for access to the Internet through an ISP in the ninety days during the reference period.

Non-Household subscribers

All businesses, corporations, non-profit organisations and government organisations who subscribe to Internet access via an ISP. This may include some home based businesses.

Megabyte (MB)

A data unit of 1,048, 576 bytes, sometimes interpreted as 1 million bytes.

Gigabyte (GB)

A data unit of 1,024 MB.

Broadband

Defined by the ABS as an 'always on' Internet connection with an access speed equal to or greater than 256kbs.

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CHARACTERISTIC: PREVALENCE OF ELECTRONIC COMMERCE

INDICATOR: Proportion of businesses placing or receiving orders via the Internet or web, by broad industry group

Just over a quarter of all businesses (28%) placed orders via the Internet or web during 2002–03. This was an increase over the previous year, when 25% of businesses placed orders via the Internet or web. The proportion of businesses receiving orders (selling) via the Internet or web increased from 6% in 2001–02 to 13% in 2002–03. The income generated from this activity more than doubled between 2001–02 and 2002–03, with Internet income earned by Australian businesses reaching approximately \$24.3 billion for 2002–03.

BUSINESSES PLACING AND RECEIVING ORDERS VIA THE INTERNET/WEB(a), by Industry

2001–02		2002–03	
Businesses placing orders via the Internet/web	Businesses receiving orders via the Internet/web(b)	Businesses placing orders via the Internet/web	Businesses receiving orders via the Internet/web(b)

Industry	%	%	%	%
Mining	28	*2	28	^4
Manufacturing	26	8	30	^24
Electricity, gas and water supply	np	np	33	13
Construction	12	3	14	^6
Wholesale trade	33	11	36	29
Retail trade	18	7	22	^9
Accommodation, cafes and restaurants	16	10	17	15
Transport and storage	22	11	23	^12
Communication services	23	9	25	^11
Finance and insurance	34	*3	33	^11
Property and business services	39	7	43	16
Health and community services	23	**1	25	^5
Cultural and recreational services	26	9	31	^15
Personal and other services	17	4	22	^11
Total	25	6	28	13

np not available for publication but included in totals where applicable, unless otherwise indicated

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

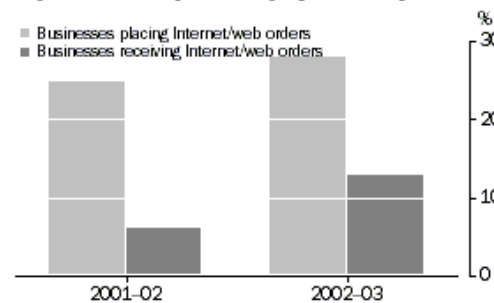
* estimate has a relative standard error of between 25% and 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Proportions are of all businesses in scope of the survey (that is mainly employing businesses) in each industry. See publication [Explanatory Notes](#) for more information

Source: ABS [Business Use of Information Technology](#), Australia, 2001–01 and 2002–03 (cat. no. 8129.0).

BUSINESSES PLACING AND RECEIVING ORDERS VIA THE INTERNET/WEB(a)



Source: ABS Business Use of Information Technology, Australia, (cat. no. 8129.0).

STATISTICAL NOTES

Data are from the ABS annual [Business Use of Information Technology Survey](#). Please see the [Explanatory Notes](#) of cat. no. 8129.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Classification by industry

The above statistics are classified according to the 1993 edition of the [Australian and New Zealand Standard Industrial Classification](#) (ANZSIC) (cat. no. 1292.0). The statistical unit used in the survey is the **management unit**; these are classified to a single industry on the basis of their main income earning activity, irrespective of whether the unit also generates income from related or unrelated secondary activities.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Web/World Wide Web (WWW)

A system of Internet servers that support specially formatted documents. The documents are formatted in a script called HTML (HyperText Markup Language) that supports links to other documents, as well as graphics, audio, and video files. Source: <http://www.webopedia.com/>.

Placing or receiving orders via the Internet or web

Placing or receiving orders for goods and services via the Internet or web, with or without associated online payments. Activities relating to Internet selling (receiving orders for goods and services via the Internet or web) are difficult to measure and estimates should be used with caution. See paragraphs 17–20 of publication [Explanatory Notes](#) for more information. Internet/Web selling includes email or Extranet orders, but excludes orders over proprietary networks not using the Internet.

INTERNATIONAL COMPARISONS

BUSINESSES USING THE INTERNET FOR PLACING AND RECEIVING ORDERS, 2001, Or closest available year(a)(b)

	Businesses placing orders over the Internet %	Businesses receiving orders over the Internet %	Businesses using the Internet %
Australia	31.8	16.3	86.0
Austria	13.5	10.8	83.7
Canada(c)	15.9	4.7	70.8
Denmark	46.5	24.1	94.8
Finland	34.5	13.7	90.8
Greece	5.3	4.9	54.2
Italy	7.8	1.7	72.0
Japan(d)	18.1	22.5	91.5

Luxembourg	17.6	6.9	54.6
New Zealand	26.0	10.1	84.0
Norway	29.5	17.2	82.0
Portugal	12.2	6.5	72.0
Spain	9.4	6.1	67.0
Sweden	53.6	17.4	89.9

(a) Proportion of businesses with ten or more employees.

(b) Beginning of 2001 for Internet use. Placing and receiving orders refer to 2000, except for Canada where placing and receiving orders refer to 2001. For Denmark and Norway, Internet use refers to 2002 and placing and receiving orders refer to 2001. For Australia refer to June 2001 for Internet use, placing and receiving orders.

(c) All businesses.

(d) All businesses with 50 and more employees.

Source: OECD, ICT database, August 2002; Eurostat, E-commerce Pilot Survey 2001 [Measuring the Information Economy](#) 2002 (<http://www.oecd.org>).

STATISTICAL NOTES

Information on business use of ICT is provided to the OECD by National Statistical Organisations. Issues for international comparability include differences in the timing and scope (in particular industry and size) of national surveys. The table presented above has had scope differences due to size removed (with the exception of Canada and Japan).

Users should note that statistics on ICT use may differ because of differences in the composition of businesses between countries.

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CHARACTERISTIC: PREVALENCE OF ELECTRONIC COMMERCE

INDICATOR: Proportion of business income attributable to receiving orders via the Internet, by business size

There were an estimated 91,000 businesses earning income from orders received via the Internet or web in 2002–03. Of those, 33% generated less than 1% of their total income in this manner. A further 24% generated between 1% and 5% of their total income via the Internet or web, while 36% of businesses generated between 5% and 50% of their income via the Internet or web. Only 7% of businesses generated 50% or more of their total income via the Internet or web.

BUSINESSES EARNING INCOME VIA THE INTERNET, By business size, 2002–03(a)

No. of employees	Internet income as a proportion of total income(b)			
	Less than 1%	1% to less than 5%	5% to less than 50%	50% or more
	%	%	%	%
0–4	¹⁹	²⁴	46	¹¹
5–19	45	²⁷	²⁵	³
20–99	54	¹⁸	²⁵	³

100 or more	^56	^17	*18	**9
Total	33	24	36	^7

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution.

* estimate has a relative standard error of between 25% and 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

– nil or rounded to zero (including null cells)

(a) Proportions are of in-scope businesses earning income via the Internet or Web in each employment size category. See publication [Explanatory Notes](#) for more information on the survey's scope.

(b) Estimates related to Internet income should be used with caution. See publication [Explanatory Notes](#) for more information.

Source: ABS [Business Use of Information Technology, Australia](#), 2002–03 (cat. no. 8129.0).

STATISTICAL NOTES

Data are from the ABS annual [Business Use of Information Technology Survey](#). Please see the [Explanatory Notes](#) of cat. no. 8129.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Web/World Wide Web (WWW)

A system of Internet servers that support specially formatted documents. The documents are formatted in a script called HTML (HyperText Markup Language) that supports links to other documents, as well as graphics, audio, and video files. Source: <http://www.webopedia.com/>.

Placing or receiving orders via the Internet or web

Placing or receiving orders for goods and services via the Internet or web, with or without associated online payments. Activities relating to Internet orders for goods and services received via the Internet/web are difficult to measure and estimates should be used with caution. See paragraphs 17–20 of publication [Explanatory Notes](#) for more information. Internet/web selling includes email or Extranet orders, but excludes orders over proprietary networks not using the Internet.

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CHARACTERISTIC: PREVALENCE OF ELECTRONIC COMMERCE

INDICATOR: Business perceptions of the benefits of receiving orders via the Internet or web

For businesses receiving orders via the Internet or web in 2002–03, being able to achieve faster business processes and improved quality of customer service were the two most commonly reported benefits, at 53% and 51% respectively. Approximately 13% of businesses receiving orders via the Internet or web indicated they did not achieve any benefits.

BUSINESS PERCEPTIONS OF THE BENEFITS OF RECEIVING ORDERS VIA THE INTERNET OR WEB, 2002–03(a)(b)

Impact		2000–01 Total	2002–03 Total
Improved quality of customer service	%	56	51
Lower transaction costs	%	26	28
Increased sales	%	na	33
Increasd number of customers	%	na	28

Faster business processes	%	57	53
Keeping pace with competitors	%	55	36
Any benefits achieved(c)	%	86	87
No benefits achieved	%	na	^13
Businesses receiving orders via Internet or web	'000	61	91

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

na not available (data published differently for 2000-01)

(a) Proportions are of in-scope businesses earning income via the Internet or web

(b) Businesses could identify more than one benefit

(c) Includes 'other' category which is not listed separately

Source: ABS [Business Use of Information Technology](#), Australia, 2000-01 and 2002-03 (cat. no. 8129.0).

For 2003-03, for the first time the survey collected reasons why businesses did not receive orders via the Internet or web. Reasons were collected from businesses which used the Internet or had a web presence, with the most common being that goods or services sold by the business were not suitable (63%), followed by a preference to maintain the current business model (39%) and a lack of customer demand (24%). This ranking was consistent across businesses with different employment sizes.

BUSINESS PERCEPTIONS OF THE BARRIERS TO RECEIVING ORDERS VIA THE INTERNET OR WEB, 2002-03(a)(b)

Barrier		2002-03 Total
Goods or services not suitable	%	63
No customer demand	%	24
Security concerns	%	8
Costs to develop and maintain technology too high	%	14
Lack of skilled employees to develop, maintain and use the technology	%	13
Timing, e.g. technology currently under development or in future work program	%	6
Prefer to maintain current business model	%	39
Businesses with Internet use or web presence not receiving orders	'000	398

(a) Proportions are of businesses with Internet use or web presence, but are not receiving orders via the Internet or web, in each employment size category.

(b) Businesses could identify more than one barrier.

STATISTICAL NOTES

Data are from the ABS annual [Business Use of Information Technology Survey](#). Please see the [Explanatory Notes](#) of cat. no. 8129.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Receiving orders via the Internet or web

Receiving orders for goods and services via the Internet or web, with or without associated online payments. This includes email or Extranet orders, but excludes orders over proprietary networks not using the Internet.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Web/World Wide Web (WWW)

A system of Internet servers that support specially formatted documents. The documents are formatted in a script called HTML (HyperText Markup Language) that supports links to other documents, as well as graphics, audio, and video files. Source: <http://www.webopedia.com/>.

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CHARACTERISTIC: PREVALENCE OF ELECTRONIC COMMERCE

INDICATOR: Business perceptions of the benefits for the business of placing orders via the Internet or web

During 2002–03, for businesses placing orders for goods or services via the Internet or web, the most common benefit reported was saving time (86%). Having access to a wider range of suppliers was the second most common benefit (40%). Approximately 6% of businesses placing orders via the Internet or web reported no benefits achieved.

BUSINESS PERCEPTIONS OF THE BENEFITS OF PLACING ORDERS VIA THE INTERNET, 2000–01(a)(b)

Benefit		Businesses placing orders via the Internet or web			
		For less than 2 years	For 2 to less than 4 years	For 4 or more years	Total
Reduced business or transaction costs	%	45	55	60	50
Time saving	%	86	89	90	87
Increased access to, and awareness of, suppliers	%	43	54	48	47

Ability to track orders	%	15	19	29	17
Compliance with supplier requirements	%	9	11	*14	10
Keeping pace with competitors	%	14	21	20	17
Businesses receiving any benefits from placing orders via the Internet	%	95	98	98	96
Businesses placing orders via the Internet	'000	80	47	13	140

* estimate has a relative standard error of between 25% and 50% and should be used with caution

(a) Proportions are of in-scope businesses placing orders via the Internet or Web within each time range.

(b) Businesses could identify more than one benefit.

Source: ABS [Business Use of Information Technology, Australia](#), 2000–01 (cat. no. 8129.0).

BUSINESS PERCEPTIONS OF THE BENEFITS OF PLACING ORDERS VIA THE INTERNET, 2001–02 and 2002–03 (a)(b)

Benefit		Businesses placing orders via the Internet or web	
		2001–02 Total	2002–03 Total
Lower product costs	%	32	29
Lower transaction costs	%	27	28
Time saving	%	84	86
Access to wider range of suppliers	%	41	40
Ability to track orders	%	19	20
Other benefits	%	2	na
Businesses receiving any benefits from placing orders via the Internet(c)	%	95	94
Businesses placing orders via the Internet	'000	166	189

na not applicable (data was collected differently in 2002–03)

(a) Proportions are of businesses placing orders via the Internet or web

(b) Businesses could identify more than one benefit.

(c) Includes 'other' category which is not listed separately for 2002-03

Source: ABS [Information Technology Survey—Business Enterprises](#), 2001–02 and 2002–03

STATISTICAL NOTES

Data are from the ABS annual [Business Use of Information Technology Survey](#). Please see the [Explanatory Notes](#) of cat. no. 8129.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Placing orders via the Internet or web

Placing orders via the Internet or web, with or without associated online payments. This includes email or Extranet orders, but excludes orders over proprietary networks not using the Internet.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Web/World Wide Web (WWW)

A system of Internet servers that support specially formatted documents. The documents are formatted in a script called HTML (HyperText Markup Language) that supports links to other documents, as well as graphics, audio, and video files. Source: <http://www.webopedia.com/>.

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CHARACTERISTIC: ICT SKILL BASE

INDICATOR: Lack of skills as a constraint to household use of computers and the Internet

For households, lack of skills as a constraint to use of computers and the Internet was less important than other barriers. More important reasons for not having a computer or Internet access were that they were not suited/there was no need for them. For instance, 23% of households without a computer reported the main reason as 'no need for a computer'.

LACK OF SKILLS AS A CONSTRAINT TO USE OF COMPUTERS AND THE INTERNET

	Constraint reported	Year	Computers %	Internet %
Households(a)	No-one in household knows how to use a computer/the Internet; lack of confidence/skills with computer(b)	2000	7	7
		2001	8	7
		2002	11	10

(a) Proportion is of households without a home computer/without access to the Internet. As with businesses, only the main reason was reported.

(b) In respect of Internet access, the person responding for the household was offered two skills related reasons for not having access to the Internet at home: 'no-one in household knows how to use the Internet' and 'lack of confidence/skills with computer'. Responses against these two reasons have been aggregated for the purposes of this indicator. In respect of having a computer, the person responding for the household was offered one skills related reason, that is 'no-one in household knows how to use a computer'.

Source:ABS [Household Use of Information Technology](#), Australia (cat. no. 8146.0)

STATISTICAL NOTES

Household data are from the ABS [Household Use of Information Technology Survey](#). Up to 2000 data was collected as part of the ABS Population Survey Monitor (PSM) in 2001 as part of the Survey of Education, Training and Information Technology (SETIT) and in 2002 as part of the General Social Survey (GSS).

Computer

In the Household Use of Information Technology Survey, a computer includes desktop computers, laptops, notebooks, items such as pocket computers or 'personal organisers' which can be plugged into larger computers and dedicated word processors. Games machines were excluded from the 2000 survey as were machines where repair or restoration to working order was not being planned.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Household

A household is defined as a group of one or more persons in a private dwelling who consider themselves to be separate from other persons in the dwelling, and who make regular provisions to take meals separately from those other persons. Lodgers who receive accommodation and meals are not treated as separate households. A household may consist of any number of family and non-family members.

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CHARACTERISTIC: STRENGTH OF THE ICT INDUSTRY

INDICATOR: Information and Communications Technology (ICT) industry income by broad industry group

During 2002-03, total income for all businesses in the ICT industry grouping was \$89,979.2 million with ICT specialist businesses recording a total income of \$79,893.7 million (89% of total).

By industry grouping, the telecommunication services industry grouping, reporting a total income of \$31,795.8 million, was the highest contributor (40%) to total income for ICT specialists.

ICT specialist businesses had ICT income of \$74,691.6 million which represented over 93% of their total income. The largest contributor to ICT income was the telecommunication services industry grouping (\$29,862.1 million), which accounted for 40% of the total ICT income. The computer wholesaling industry contributed \$16,625.2 million (22%) and the computer consultancy services industry contributed \$15,099.0 million (20%).

ICT INDUSTRY INCOME AND PROFIT, by industry, 2002–03

ICT specialist businesses(a)

All businesses

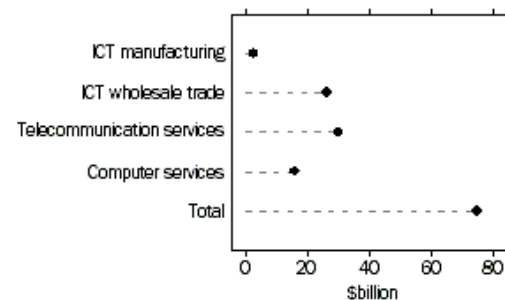
Industry group	ICT income(b) \$m	Total income(c) \$m	Operating profit before tax(d) \$m	ICT income(b) \$m	Total income(c) \$m	Operating profit before tax(d) \$m
ICT manufacturing	2,525.3	2642.2	^107.6	2,567.3	4,392.3	187.5
ICT wholesale trade	26,187.7	28,463.2	899.4	26,595.5	36,798.6	1,305.5
Telecommunication services	29,862.1	31,795.8	4,766.0	29,862.1	31,795.8	4,766.0
Computer services	16,116.4	16,992.5	^619.8	16,116.4	16,992.5	^619.8
Total	74,691.6	79,893.7	6,392.7	75,141.3	89,979.2	6,878.7

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a)(b)(c)(d) See STATISTICAL NOTES below for an explanation of these

Sources: ABS [Information and Communication Technology, Australia](#), 2002–03 (cat. no. 8126.0).

ICT INCOME OF ICT SPECIALIST BUSINESSES



Source: ABS Information and Communication Technology, Australia, 2002–03 (cat. no. 8126.0).

STATISTICAL NOTES

Data are from the ABS [Information Technology and Telecommunications Survey](#), which is conducted every two years and covers the main industries involved in the production and distribution of ICT goods and services in Australia. Please see the [Explanatory Notes](#) of cat. no. 8126.0 for further information on the survey including scope, methodology, data quality, classifications, concepts and definitions.

The 2002–03 ICT industry survey is based on a new statistical infrastructure arising from the introduction of The New Tax System (TNTS). As a result, data from this survey is not comparable to previously released results. For more information, please refer to the [Explanatory Notes](#).

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CHARACTERISTIC: BUSINESS AND GOVERNMENT USE OF ICT

INDICATOR: Proportion of businesses with Internet access, by broad industry group

At the end of June 2003, the proportion of Australian businesses with Internet access varied considerably across industries. The proportion was lowest in the Personal and other services and Accommodation, cafes and restaurants industries(58%) and highest in the Property and business services industry (89%). The highest proportions of businesses with a web presence were in the Cultural and recreational services industry (37%) while the lowest proportion was in the Construction industry (11%). Between June 2002 and June 2003, there was little growth overall in the proportion of businesses with Internet access and the proportion with a web presence. However, some industries showed greater levels of growth, notably Retail trade and Finance and insurance.

PROPORTION OF BUSINESSES WITH INTERNET ACCESS AND WEB PRESENCE(a), by Industry

Industry	June 2002		June 2003	
	Businesses with Internet access	Businesses with web presence	Businesses with Internet access	Businesses with web presence
	%	%	%	%

Mining	81	30	78	31
Manufacturing	71	29	73	29
Electricity, gas and water supply	np	np	79	35
Construction	63	9	61	11
Wholesale trade	79	36	79	33
Retail trade	63	25	60	19
Accommodation, cafes and restaurants	57	31	58	29
Transport and storage	66	23	67	20
Communication services	64	22	63	22
Finance and insurance	84	25	77	26
Property and business services	87	30	89	28
Health and community services	72	15	72	16
Cultural and recreational services	80	36	81	37
Personal and other services	53	23	58	25
Total	72	24	71	23

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Proportions are of all businesses in scope of the survey (that is mainly employing businesses) in each industry. See publication [Explanatory Notes](#) for more information.

Source: ABS [Business Use of Information Technology](#), Australia, 2001–02 and 2002–03 (cat. no. 8129.0).

STATISTICAL NOTES

Data are from the ABS annual [Business Use of Information Technology Survey](#). Please see the [Explanatory Notes](#) of cat. no. 8129.0 for further information on the survey including scope, methodology, data quality, concepts and definitions.

Classification by industry

The above statistics are classified according to the 1993 edition of the [Australian and New Zealand Standard Industrial Classification](#) (ANZSIC) (cat. no. 1292.0). The statistical unit used in the survey is the **management unit**; these are classified to a single industry on the basis of their main income earning activity, irrespective of whether the unit also generates income from related or unrelated secondary activities.

Internet

A world-wide collection of computers which are linked together to form a repository of stored information and to provide a range of communication services. These services include, but are not limited to, the World Wide Web (WWW), email and extranet.

Web presence

Includes a web site, home page or a presence on another entity's web site. A web site or home page is an electronic document that is accessed via a unique address on the World Wide Web. The document provides information in a textual, graphical or multimedia format.

INTERNATIONAL COMPARISONS

INTERNET PENETRATION BY INDUSTRY, 2001(a)(b)

	Manufacturing	Retail trade	Wholesale trade	Wholesale and retail trade	Finance and insurance	Real estate, renting and business services	All industries
	%	%	%	%	%	%	%
Australia	88.0	78.0	94.0	na	98.0	94.0	86.0
Austria	79.8	71.5	94.0	na	98.3	94.6	83.7
Canada(c)	82.4	65.2	81.7	na	82.0	na	70.8
Denmark	92.0	87.0	98.0	na	na	98.0	93.0
Finland	90.0	85.0	96.0	na	na	96.0	91.0
Germany	na	na	na	83.2	na	na	na
Greece	49.6	na	na	58.5	66.2	69.1	54.2
Italy	71.0	na	na	76.7	na	80.2	72.0
Japan(d)	92.8	89.6	92.4	na	91.8	90.2	91.5
Luxembourg	53.5	na	na	48.0	70.9	72.9	54.6
New Zealand	87.0	84.0	90.0	na	98.0	97.0	84.0
Norway	92.0	56.0	92.0	na	99.0	88.0	81.5
Portugal	68.0	59.0	83.0	na	96.0	77.0	72.0
Spain	69.5	na	na	76.0	97.4	50.4	67.0
Sweden	92.0	82.0	94.0	na	99.0	96.0	90.0
United Kingdom	68.8	41.1	71.5	na	80.7	73.7	63.4

(a) At the start of 2001 (except for Australia, where it is as at 30 June 2001).

(b) Proportion of businesses with ten or more employees in each industry group.

(c) All businesses.

(d) Businesses with 50 or more employees.

Source: OECD, ICT database and Eurostat, E-Commerce Pilot Survey 2001, August 2002 [Measuring the Information Economy](http://www.oecd.org) 2002 (<http://www.oecd.org>).

STATISTICAL NOTES

Information on business Internet use is provided to the OECD by National Statistical Organisations. Issues for international

comparability include differences in the timing and scope (in particular industry and size) of national surveys. The table presented above has had scope differences due to size removed (with the exception of Canada and Japan). Scope differences due to industry will be present in the total All industries figure.

Users should note that statistics on ICT use may differ because of differences in the composition of businesses between countries.

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CHARACTERISTIC: HOUSEHOLD AND INDIVIDUAL USE OF ICT

INDICATOR: Proportion of individuals (aged 15 years or over) with a disability, using the Internet for particular activities and purposes, including accessing government services

The most commonly reported purpose of Internet use at home for people with a disability, in 2003, was for personal or private use (94%).

PURPOSE OF INTERNET USE AT HOME BY PERSONS WITH A DISABILITY(a)(b), 2003

	Personal or private purposes	Work or business related purposes	Education or study purposes	Volunteer or community purposes
State or Territory (c)	%	%	%	%
New South Wales	95	39	37	10
Victoria	93	42	36	11
Queensland	95	33	40	9
South Australia	97	37	37	12

Western Australia	93	34	30	11
Tasmania	94	25	31	18
Australian Capital Territory	97	37	46	*16
Total	94	37	37	11

(a) More than one purpose may be nominated.

(b) Excludes non-restrictive disfigurements or deformities.

(c) Northern Territory estimates are included in totals and other classifications but cannot be shown separately.

* Estimate has a relative standard error of 25% to 50%.

Source: ABS [Household Use of Information Technology](#), Australia, 2002 and 2003 (cat. no. 8146.0).

Government services were accessed via the internet for private purposes by approximately 510,000 people aged 15 years or over with a disability (15%).

PERSONS WITH A DISABILITY USING THE INTERNET FOR PRIVATE PURPOSES(a), 2003

State or Territory (b)	Pay bills or transferred funds	Accessed government services	Ordered goods or services
	%	%	%
New South Wales	15	16	12
Victoria	14	15	9
Queensland	13	14	8
South Australia	15	16	10
Western Australia	15	16	8
Tasmania	10	12	9
Australian Capital Territory	10	7	4
Total	14	15	10

(a) Excludes non-restrictive disfigurements or deformities.

(b) Northern Territory estimates are included in totals and other classifications but cannot be shown separately.

* Estimate has a relative standard error of 25% to 50%.

Source: ABS [Household Use of Information Technology](#), Australia, 2002 and 2003 (cat. no. 8146.0).

STATISTICAL NOTES

Disability data are from the 2003 Survey of Disability, Ageing and Carers. The data relate to people 15 years or over with a disability who live in private dwellings, excluding those with only a disfigurement or deformity without any limitations.

Please note: The sample in the Northern Territory contribute appropriately to national estimates but cannot support reliable estimates for the Northern Territory. Therefore, estimates for the Northern Territory are not shown separately.

MORE INFO

Household data are from the ABS [Household Use of Information Technology Survey](#). Up to 2000 data was collected as part of the ABS Population Survey Monitor (PSM) in 2001 as part of the Survey of Education, Training and Information Technology (SETIT) in 2002 as part of the General Social Survey (GSS) and in 2003 as part of the Survey of Disability, Ageing and Carers (SDAC).

For more information on the Survey of Disability, Ageing and Carers and the Information Technology component of the Survey, see the Explanatory notes of publication 8146.0

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CHARACTERISTIC: STRENGTH OF THE ICT INDUSTRY

INDICATOR: Information and Communications Technology (ICT) industry employment

There were 235,696 persons employed in ICT specialist businesses at the end of June 2003. Males accounted for 68% (159,528 persons) of total employment with the wholesale trade industry grouping having the highest proportion of male employees (70%) and the telecommunications services industry grouping the lowest (65%).

ICT INDUSTRY EMPLOYMENT(a), June 2003

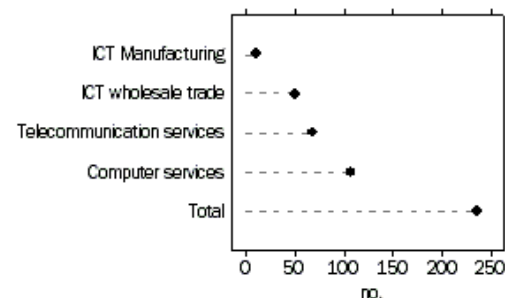
Industry group	ICT specialist businesses(b)			All businesses		
	ICT employees (c) no.	Other employees no.	Total (d) no.	ICT employees (c) no.	Other employees no.	Total (d) no.
ICT manufacturing	1,730	9,095	10,838	2,597	14,542	17,152
ICT wholesale trade	16,755	33,250	50,013	17,942	54,451	72,427
Telecommunication services	9,916	57,834	67,750	9,916	57,834	67,750
Computer services	79,286	27,777	107,094	79,286	27,777	107,094

Total	107,686	127,956	235,696	109,741	154,604	264,423
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- (a) Number of persons employed at the end of June. See STATISTICAL NOTES below for an explanation of these terms.
- (b)(c) See STATISTICAL NOTES below for an explanation of these terms.
- (d) Includes working proprietors and partners of unincorporated businesses.

Sources: ABS [Information and Communication Technology, Australia](#), 2002–03 (cat. no. 8126.0).

TOTAL EMPLOYMENT OF ICT SPECIALIST BUSINESSES, 2002-03



Source: ABS Information and Communication Technology, Australia, 2002–03 (cat. no. 8126.0).

STATISTICAL NOTES

Data are from the ABS [Information Technology and Telecommunications Survey](#), which is conducted every two years and covers the main industries involved in the production and distribution of ICT goods and services in Australia. Please see the [Explanatory Notes](#) of cat. no. 8126.0 for further information on the survey including scope, methodology, data quality, classifications, concepts and definitions.

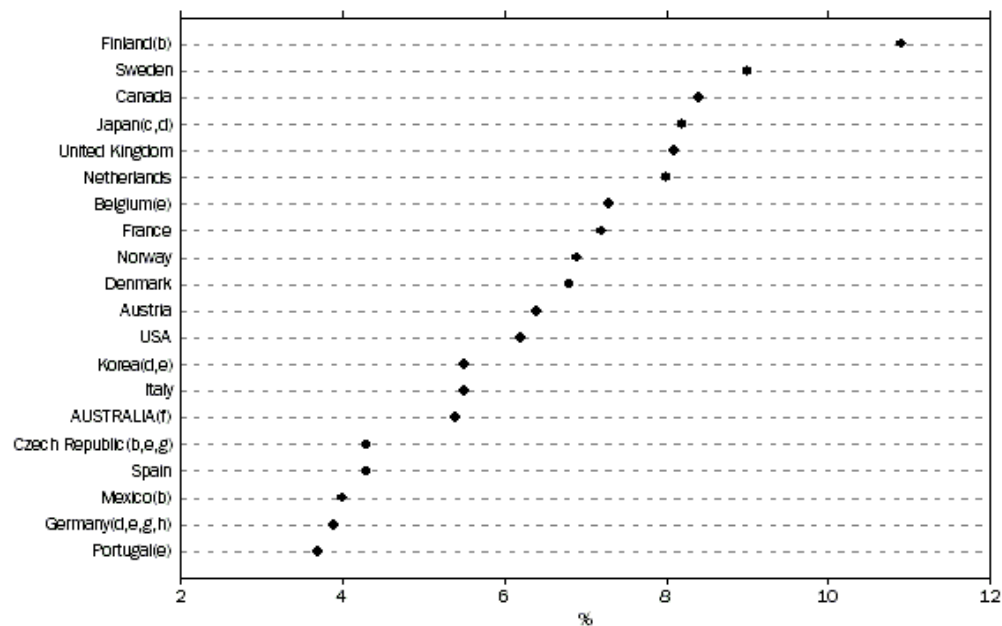
The 2002–03 ICT industry survey is based on a new statistical infrastructure arising from the introduction of The New Tax System (TNTS). As a result, data from this survey is not comparable to previously released results. For more information, please refer to the [Explanatory Notes](#).

Indicator originally proposed in Framework

The ABS Discussion Paper [Measuring a knowledge-based economy and society, An Australian Framework](#) (cat. no. 1375.0) proposed that this indicator present information on share of total business employment. That information is provided under **International Comparisons** below.

INTERNATIONAL COMPARISONS

SHARE OF ICT SECTOR EMPLOYMENT IN BUSINESS SECTOR EMPLOYMENT(a) 2000 OR LATEST YEAR AVAILABLE



(a) Defined as the number of persons engaged.
 (b) Based on employees figures only.
 (c) ICT services include market research and public opinion polling.
 (d) 1999.
 (e) Rental of ICT goods (ISIC 7123) is not available.
 (f) June 2001.
 (g) ICT wholesale (ISIC 5150) is not available.
 (h) Telecommunication services (ISIC 642) are not available.

Source: OECD estimates, based on national sources; STAN and National Accounts databases, August 2002 [Measuring the Information Economy](http://www.oecd.org) 2002 (<http://www.oecd.org>).

STATISTICAL NOTES

Information on ICT industries (called the ICT sector by the OECD) is provided to the OECD by National Statistical Organisations. Issues for international comparability include differences in the timing, scope and coverage of data collections and the national classifications used to approximate the ICT sector.

In 1998, OECD member countries agreed on a definition of the ICT sector as a combination of manufacturing and services industries that "capture, transmit and display data and information electronically". The ICT sector is defined in terms of the International Standard Industrial Classification (ISIC) Rev. 3.

Methodological information about sources and data collection methods is available from the OECD publication [Measuring the Information Economy](http://www.oecd.org). Data provided by member countries have been combined with different data sources to estimate ICT aggregates compatible with national accounts totals. For this reason, the indicators presented here may differ from figures contained in national reports and in previous OECD publications.

In respect of Australia, data are based on the [Australian and New Zealand Standard Industrial Classification](#) (ANZSIC) (cat. no. 1292.0) which differs in some details from ISIC Rev. 3. In addition, details provided to the OECD differ somewhat from information published in catalogue 8126.0. In particular, information is provided to the OECD on a whole of industry basis (rather than for specialist ICT businesses) and information includes data on some industry classes which are included in the OECD definition of the ICT sector but not included in the ABS [Information Technology and Telecommunications Survey](#).

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CHARACTERISTIC: STRENGTH OF THE ICT INDUSTRY

INDICATOR: Production of Information and Communications Technology (ICT) goods and services, by broad commodity group

Total income from the production of ICT goods and services was \$48,778.5 million in 2002–03. The largest contributor was income from provision of telecommunication services (60.1%), and the smallest contributor was packaged software and associated licensing (1.1%)

DOMESTIC PRODUCTION OF ICT GOODS AND SERVICES(a)

Income from domestic
production

2002–03

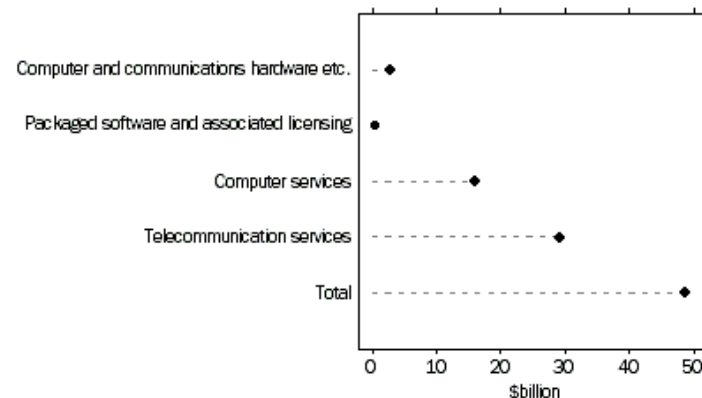
Commodity group	\$m
Computer and communications hardware, equipment & cables (b)	2,933.8
Packaged software and associated licensing	537.8
Income from provision of computer services	15,974.7
Income from provision of telecommunication services	29,332.3
Total	48,778.5

(a) Production from all in-scope businesses in the ICT industry (see definition in STATISTICAL NOTES below) and in the Recorded media manufacturing and publishing industry (ANZSIC class 2430).

(b) See ABS cat. no. 8126.0 for a list of commodities included in the commodity group.

Source: ABS [Information Technology, Australia](#), 2002–03 (cat. no. 8126.0).

INCOME FROM DOMESTIC PRODUCTION OF ICT GOODS AND SERVICES



Source: ABS Information and Communication Technology, Australia, 2002–03 (cat. no. 8126.0).

STATISTICAL NOTES

Data are from the ABS [Information Technology and Telecommunications Survey](#), which is conducted every two years and covers the main industries involved in the production and distribution of ICT goods and services in Australia. Please see the [Explanatory Notes](#) of cat. no. 8126.0 for further information on the survey including scope, methodology, data quality, classifications, concepts and definitions.

The 2002-03 ICT industry survey is based on a new statistical infrastructure arising from the introduction of The New Tax System (TNTS). As a result, data from this survey is not comparable to previously released results. For more information, please refer to the [Explanatory Notes](#)

Recorded media manufacturing and publishing industry (ANZSIC class 2430)

This industry is not included in the ICT industry as defined by the ABS. However, the industry has significant ICT activity, hence its

ICT income, which is mainly from the sale and licensing of packaged software produced, has been included as ICT production.

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CHARACTERISTIC: STRENGTH OF THE ICT INDUSTRY

INDICATOR: Trade in Information and Communications Technology (ICT) goods and services, by broad commodity group

Imports of ICT goods during 2002–03 totalled \$12,293.0 million and mainly comprised \$3,435.7 million of radio, television and communication equipment and apparatus, \$2,384.4 million of computer parts, consumables and accessories, \$2,219.6 million of computer peripherals and \$2,105.8 million of computers and personal computers.

Exports of ICT goods (including re-exports) were valued at \$2,329.4 million and mainly comprised \$890.8 million of computer parts, consumables and accessories and \$496.3 million of radio, television and other communication equipment and apparatus.

IMPORTS AND EXPORTS OF ICT GOODS AND SERVICES

	Imports(a)	Exports(a)(b)
	2002–03	2002–03
Commodity group	\$m	\$m

Computer and communications hardware, equipment & cables (c)	12,293.0	2,329.4
Packaged software and associated licensing	506.8	162.9
Computer services	929.0	1,071.0
Telecommunication services	1,407.0	1,083.0
Total	15,135.9	4,646.3

(a) See STATISTICAL NOTES below for more information.

(b) Exports include exports of Australian commodities and re-exports of goods of foreign origin.

(c) See ABS cat. no. 8126.0 for a list of commodities included in the commodity group.

Source: ABS [Information Technology, Australia](#), 2002–03 (cat. no. 8126.0).

STATISTICAL NOTES

[Merchandise import](#) and [Merchandise export](#) data are compiled by the ABS from information submitted by importers, exporters or their agents to the Australian Customs Service. Services trade data are collected in the ABS [Survey of International Trade in Services](#).

Imports (customs value)

The value of imports is the Australian Customs value. This includes inland freight, insurance and other distributive services in the exporting country, up to the place of export and is usually the same as or very close to the f.o.b. value.

Exports (f.o.b.)

The value of exports is the free on board (f.o.b.) transaction value of the goods expressed in Australian dollars. The f.o.b. value includes the value of packaging (other than containerisation) and excludes freight and insurance costs for the overseas route.

INTERNATIONAL COMPARISONS

ICT MANUFACTURING EXPORTS (SHARE) AND TRADE BALANCE

	Share of ICT manufacturing exports (a) in total manufacturing exports		ICT manufacturing trade balance (b)
	1990 or closest available %	2001 or closest available %	2001 or closest available %
Australia	2.3	3.3	–8.7
Canada	5.9	6.0	–3.5
Denmark(c),(d)	6.5	9.0	–2.0
Finland	7.3	21.8	5.4

France	7.6	10.9	-0.9
Germany(c),(d)	7.7	10.8	-0.9
Greece(c),(d)	1.4	5.4	-5.8
Iceland	0.1	0.2	-4.9
Ireland	24.1	39.9	11
Italy	5.9	5.6	-2.0
Japan	26.0	24.6	6.1
Mexico(c),(d)	3.2	24.8	0.7
Netherlands(c)	9.4	22.9	-0.7
New Zealand(c),(d)	0.7	1.6	-7.1
Norway	2.7	3.0	-3.9
Portugal(c),(d)	5.1	8.6	-2.8
Slovak Republic(c)	na	na	-2.8
Spain(c)	4.3	6.0	-3.6
Sweden	9.5	13.3	0.6
Switzerland	6.2	6.3	-2.2
Turkey(c),(d)	2.8	5.3	-6.9
United Kingdom	12.4	20.0	-0.2
United States of America	15.4	21.4	-2.1

na not available

(a) Office and computing machinery; radio, TV and communication equipment; insulated wire and cable; ICT scientific instruments.

(b) Calculated as ICT exports minus ICT imports divided by total manufacturing trade (the average of exports and imports).

(c) ICT manufacturing trade balance, latest year available is 2000.

(d) Share of ICT manufacturing exports etc., 2000 instead of 2001.

Source: OECD, International Trade in Commodity Statistics (ITCS) and Structural Analysis (STAN) databases, August 2002 [Measuring the Information Economy](#) 2002 (<http://www.oecd.org>).

STATISTICAL NOTES

ICT sector exports and imports at current prices have been estimated using the OECD's International Trade in Commodity Statistics (ITCS) database. The OECD definition of the ICT manufacturing sector, based on ISIC Rev. 3, has been used as the basis for the ICT trade indicators. Current price exports and imports for this sector have been derived from the product-based data in OECD's International Trade in Commodity Statistics (ITCS) database by applying a standard Harmonised System Rev. 1 (HS1) to ISIC Rev. 3 conversion key. The trade indicators thus constructed here reflect trade in goods for which the ICT manufacturing sector can be considered the origin. This type of aggregation, as well as the use of a single conversion key for all OECD countries, means that the figures reported here are not strictly comparable with those published by individual countries.

Data for both imports and exports of individual countries include imported goods that are subsequently re-exported. Imports and

subsequent re-exports may be in the same or in different reference periods. In the latter case, this may influence not only indicators of countries' relative trade performance but also indicators of individual countries' trade balances.

The ICT sector trade balance is calculated as ICT exports minus ICT imports divided by total manufacturing trade (the average of exports and imports).

For information see the OECD web site, [Measuring the Information Economy 2002](#).

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1377.0 - Measures of a Knowledge-based Economy and Society, Australia, 2003

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CHARACTERISTIC: STRENGTH OF THE ICT INDUSTRY

INDICATOR: Research and experimental development (R&D) performed by the ICT industry

During 2002-03, expenditure on R&D by the ICT industry was \$1,497m, 25% of total business sector R&D expenditure (\$5,979m). In current price terms, R&D expenditure by the ICT industry was 12% lower than the level recorded in 2001-02. ICT industry R&D expenditure was predominantly directed towards ICT research fields (90% of total ICT industry R&D expenditure). Major ICT research fields where ICT industry R&D expenditure occurred were Computer software (\$536m in 2002-03) and Communication technologies (\$363m), 36% and 24% respectively of the total expenditure on R&D by the ICT industry. The Computer services industry was the highest R&D performer in the ICT industry, with \$719m (48% of the total), followed by the Telecommunication services industry (\$318m or 21%). R&D expenditure in ICT research fields by businesses not in the ICT industry was significant, being \$515m in 2002-03.

R&D EXPENDITURE BY ICT INDUSTRY GROUPINGS AND RESEARCH FIELD

ICT manuf- acturing	ICT wholesale trade	Tele communication services	Comp- uter services	Total ICT	Total all
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Research fields	industry \$m	industry \$m	industry \$m	industry \$m	industry \$m	industries \$m
2001-02						
Information systems and technologies	12.9	6.9	11.8	110.6	142.2	427.0
Computer hardware	7.2	np	np	5.1	18.2	28.8
Computer software	85.2	52.3	13.1	406.1	556.7	781.5
Communication technologies	123.6	np	np	103.8	543.1	613.3
Other information, computer & communication technologies	35.6	np	np	19.9	245.9	305.5
Total ICT research fields	264.6	np	np	645.4	1,506.0	2,156.2
Other fields	89.8	np	np	80.7	189.4	2,826.4
Total all research fields	354.4	255.0	359.9	726.1	1,695.4	4,982.6
2002-03						
Information systems and technologies	7.4	10.2	2.7	142.6	163.0	358.5
Computer hardware	4.0	np	np	6.4	11.7	20.2
Computer software	60.4	84.5	6.0	384.9	535.8	775.9
Communication technologies	66.9	np	np	102.6	363.0	398.0
Other information, computer & communication technologies	21.7	np	np	40.9	269.8	305.5
Total ICT research fields	160.4	np	np	677.5	1,343.3	1,858.1
Other fields	91.8	np	np	41.9	153.3	4,120.5
Total all research fields	252.2	207.0	318.0	719.4	1,496.6	5,978.6

np not available for publication but included in totals where applicable

Source: ABS [Survey of Research and Experimental Development - Businesses](#).

STATISTICAL NOTES

The data presented here have been drawn from the annual ABS [Survey of Research and Experimental Development - Businesses](#) for the particular industries covered by the ICT industry as defined below.

ICT industry

The ICT industry is defined as those industries involved in the production and distribution of ICT goods and services in Australia. The

ICT industry groups presented in the table above consist of the following aggregations of classes of the [Australian and New Zealand Standard Industrial Classification](#) (ANZSIC) (cat. no. 1292.0):

ICT manufacturing

Class 2841, Computer and business machine manufacturing

Class 2842, Telecommunication, broadcasting and transceiving equipment manufacturing

Class 2849, Electronic equipment manufacturing

Class 2852, Electric cable and wire manufacturing

ICT wholesaling

Class 4613, Computer wholesaling

Class 4614, Business machine wholesaling n.e.c.

Class 4615, Electrical and electronic equipment wholesaling n.e.c.

Telecommunication services

Class 7120, Telecommunication services

Computer Services

Class 7831, Data processing services

Class 7832, Information storage and retrieval services

Class 7833, Computer maintenance services

Class 7834, Computer consultancy services

Research fields (full name: Research Fields, Courses and Disciplines)

Fields in which the R&D activity was performed. The **Research Fields, Courses and Disciplines** classification is primarily structured around disciplines or activities and describes what research is being performed. The classification is a component of the [Australian Standard Research Classification](#) (ASRC) which is the collective name for a set of three related classifications developed for use in the measurement and analysis of research and experimental development (R&D) undertaken in Australia. For the purposes of this indicator, the categories relating to ICT have been defined as a sub-classification of the 1998 edition of the ASRC.

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Special Article - Stock of Human Capital

Human capital is an important concept in modern economics and in economic policy discourse. Unfortunately, direct measures of human capital stocks are available for very few countries. The ABS has recently produced experimental measures of the stock of human capital for Australia full details of which are available in the following paper.

[Working Papers in Econometrics and Applied Statistics: No 2004/1 Measuring the Stock of Human Capital for Australia](#) (cat. no.1351.055.001)

These estimates are based on a 'lifetime labour income approach'. This method measures the stock of human capital as the discounted present value of expected lifetime labour market income. Expected income streams are derived by using cross-sectional information on labour income, employment rates and school participation rates. This approach is also able to account for the effect on human capital formation of current schooling activities – that is, it can account for additional human capital embodied in those individuals who are still participating in formal schooling and who anticipate improved employment and income prospects as a result.

Using the full Australian Census data for 1981, 1986, 1991, 1996 and 2001, this work provides five snapshots of age-earnings profiles for four categories of educational attainment for both men and women over this twenty year period. Based on these age-earnings profiles, per capita measures of lifetime labour market incomes are derived for each age/sex/education cohort, and they are applied to

the number of people in the corresponding group. It then aggregates across all groups to estimate the human capital stock for Australia, which are presented in the following table.

		MEASURES OF HUMAN CAPITAL STOCK(a)				
		1981	1986	1991	1996	2001
		\$b	\$b	\$b	\$b	\$b
Male	Higher degree	15.15	29.40	67.82	109.73	160.27
	Bachelor degree	77.71	164.80	300.73	461.47	659.28
	Skilled labour	250.77	452.89	662.91	827.02	1,104.18
	Unqualified	378.91	651.66	941.76	1,133.31	1,351.96
	Sub Total	722.54	1,298.75	1,973.21	2,531.53	3,275.69
Female	Higher degree	3.34	7.58	21.77	45.38	88.70
	Bachelor degree	31.42	78.99	192.13	337.94	570.21
	Skilled labour	100.25	194.72	266.89	342.22	463.99
	Unqualified	331.10	538.15	777.47	996.05	1,177.07
	Sub Total	466.11	819.44	1,258.26	1,721.60	2,299.97
Total		1,188.65	2,118.18	3,231.47	4,253.13	5,575.66

(a) Billions of current dollars

These estimates show that there has been a significant increase in the stock of human capital in Australia over the 20 year period, characterised by sharply rising shares of total human capital attributable to more educated workers.

For more information see [Working Papers in Econometrics and Applied Statistics: No 2004/1 Measuring the Stock of Human Capital for Australia](#) (cat. no.1351.055.001) available on the ABS website.

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